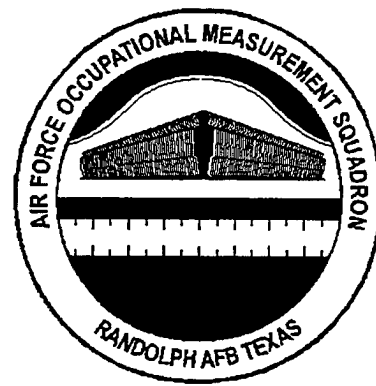


DTIC



UNITED STATES AIR FORCE

# OCCUPATIONAL SURVEY REPORT

AIRCRAFT METALS TECHNOLOGY

AFSC 2A7X1

19971022 030

OSSN 2282

SEPTEMBER 1997

OCCUPATIONAL MEASUREMENT SQUADRON  
AIR FORCE OCCUPATIONAL MEASUREMENT SQUADRON  
AIR EDUCATION AND TRAINING COMMAND  
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## PREFACE

This report presents the results of an Air Force Occupational Survey of the Aircraft Metals Technology career ladder, Air Force Specialty Code (AFSC) 2A7X1. Authority for conducting occupational surveys is contained in AFI 36-2623. Copies of this report and pertinent computer printouts are distributed to the Air Force Functional Manager, the operations training location, all major using commands, and other interested operations and training officials.

Mr. Michael F. Brosnan, Inventory Development Specialist, developed the survey instrument. Second Lieutenant David A. Huber, Occupational Analyst, analyzed the data and wrote the final report. Mrs. Jeanie C. Guesman provided computer programming support. Senior Airman Therese A. Cofer provided administrative support. This report has been reviewed and approved by Lieutenant Colonel Roger W. Barnes, Chief, Airman Analysis Section, Occupational Analysis Flight, Air Force Occupational Measurement Squadron (AFOMS).

Additional copies of this report can be obtained by writing to AFOMS/OMYXI, 1550 5th Street East, Randolph AFB Texas 78150-4449, or by calling DSN 487-5543. For information on the Air Force occupational survey process or other on-going projects, visit our web site at <http://www.omsq.af.mil>.

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## SUMMARY OF RESULTS

1. **Survey Coverage:** Survey results are based on responses from 893 Aircraft Metals Technology personnel. This represents 61 percent of the total assigned AFSC 2A7X1 population. Incumbents were surveyed across all of the major commands. Active Duty, National Guard, and Reserve personnel are included in this survey. The sample includes personnel from the 3-, 5-, and 7-skill levels.
2. **Career Ladder Structure:** Seven independent jobs (IJs) and one cluster were identified in the career ladder analysis. The IJs were: Tool and Equipment Maintenance; Extraction and Disassembly; Milling and Lathe Machine Operator; Tungsten Inert Gas (TIG) Welder; Milling and Lathe Machine Instructor; TIG Welding Instructor; and Managerial. The cluster identified was the Aircraft Metals Technician Cluster. The structure identified is similar to that described in the 1993 survey.
3. **Career Ladder Progression:** The 3- and 5-skill level personnel perform technical functions, while the 7-skill level members perform technical, training, and supervisory tasks.
4. **Training Analysis:** A match of survey data to the AFSC 2A7X1 Specialty Training Standard (STS) provided support for the STS items. Some items were recommended for deletion. There were items that were recommended for change in proficiency code. Also, there were tasks with high percentages of members performing, but were not matched to the STS. These tasks were recommended for inclusion into the STS.
5. **Job Satisfaction Analysis:** Overall, the survey respondents expressed high job satisfaction. All component groups expressed high job satisfaction in the five job satisfaction indication categories. Reenlistment intentions for all component groups were high.
6. **Implications:** No major changes have occurred with AFSC 2A7X1 since the survey published in 1993.

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**OCCUPATIONAL SURVEY REPORT (OSR)  
AIRCRAFT METALS TECHNOLOGY CAREER LADDER  
(AFSC 2A7X1)**

**INTRODUCTION**

This OSR presents the results of an occupational survey of the Aircraft Metals Technology specialty completed by the Occupational Analysis Flight, Occupational Measurement Squadron, in July 1997. This survey was conducted as part of a 5-year survey cycle. The previous survey was completed in January 1993.

Background

The AFSC 2A7X1 OSR can assist technical training personnel in updating the training programs and evaluating the current classification structure. The need for specialized training for certain major command (MAJCOM) or skill-level groups can be determined through interpretation of the data.

According to AFMAN 36-2108 *Specialty Descriptions* for AFSC 2A7X1, effective 31 October 1993, Aircraft Metals Technology personnel advise on metals machining, welding, designing, and production problems. These personnel also disassemble, assemble, and fit component parts using machine screws, bolts, rivets, press fits, and welding techniques. Furthermore, personnel maintain and inspect hand tools and metal working machinery. For entry into this specialty, normal color vision and depth perception, as defined in AFMAN 48-123, is required. The Armed Forces Vocational Aptitude Battery aptitude requirement for this AFSC is Mechanical 51. The strength requirement for this AFSC is "G" (weight lift of 50 lbs).

The current AFSC 2A7X1 training program consists of an entry-level course (J3ABP2A731-001), two 5-skill level courses, and one 7-skill level course, all conducted at Aberdeen Proving Ground MD. Course J3ABP2A731-001 is 16 weeks and one day long and includes instruction in principles, procedures, techniques, and processes of machining, welding, cutting, soldering, brazing, heat treating and hand forming various types of ferrous and nonferrous metals and materials used in fabrication, modification, and repair of mechanical parts required in maintaining Air Force weapons and general ground support equipment.

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The Advanced Metals Technology 5-skill level course (J3AZP2A751-001) is 3 weeks and 3 days long. It provides instruction in shop math, left hand, multiple lead, and acme threading operations, toolpost grinding, rotary table operation, transfer of bathtub molds, surface grinding angles, and tool and cutter grinder operation.

The Heat Treatment 5-skill level course (J3AZP2A751-002) is 3 weeks long. Course contents include identification and specification of metals, theory and principles of heat treating, furnace operation and adjustment and calibration of furnace controls, heat treatment of ferrous and nonferrous metals to include hardening, tempering, annealing, normalizing, and case hardening of steels, and solution and precipitation heat treatment of heat and corrosion resistant and aluminum metals.

The Aircraft Metals Technology Craftsman 7-skill level course (J3ACP2A771-000) is 2 weeks long. Course contents include planning/scheduling maintenance, analyzing requirements, management of resources, and advanced maintenance technologies.

## SURVEY METHODOLOGY

### Inventory Development

Data for this survey was collected by administering USAF Job Inventory (JI) OSSN 2282, dated January 1997. During the initial inventory development, 32 subject matter-experts (SMEs) from seven operational bases and one training unit were interviewed. The developer also reviewed pertinent career ladder documents, the previous inventory, and previous OSR to prepare a task list. Bases visited during this development included:

<u>BASE</u>	<u>UNIT</u>	<u>REASON FOR VISIT</u>
Aberdeen Proving Ground MD	361 TRS	Training Base
Holloman AFB NM	49 MXS	F-117 Base
Travis AFB CA	60 EMS	AMC Base
Nellis AFB NV	57 EMS	A-10/F-15/F-16 Base
Dyess AFB TX	7 MXS	ACC Base
Barksdale AFB LA	2 MXS	ACC Base

Whiteman AFB MO	509 MXS	ACC Base
Hurlburt Field FL	16 EMS	AFSOC Base

The resulting JI lists 756 tasks, grouped into 18 duty titles. The inventory also contains a number of background questions relating to duty AFSC (DAFSC), time in present job, total active military service (TAFMS), work area assigned, job title, support equipment used, metals used, and job satisfaction information.

### Survey Administration

From January through May 1997, the inventory booklets were administered to personnel eligible for the survey. Base Training Offices located at 183 bases across various Air Force MAJCOMs gave the inventory booklets to AFSC 2A7X1 personnel with DAFSCs of 2A731, 2A751, and 2A771. The respondents were picked from a computer generated mailing list from the Air Force Personnel Center. Personnel not considered eligible to take part in the survey were those who were in transition to a permanent change of station, those retiring at the time of the survey, those hospitalized, and those who had not been in their present job for a period of 6 weeks.

All eligible members who completed an inventory booklet first completed an identification and background information section. In the second step, the personnel went through the booklet and checked all tasks performed on their present job. After checking the performed tasks, they then rated the tasks on a scale from 1 to 9 based on the relative amount of time they spent on that task compared to all others. A rating of 1 indicated a very small amount of time was spent, and a rating of 9 indicated a large amount of time was spent on the task. To determine relative time spent on each task checked by a respondent, the sum of the ratings was assumed to account for 100 percent of his time on the job. All respondents' responses were added, then each rating was divided by the sum of all responses. Then, this quotient was multiplied by 100 to get the relative percent time spent for each task. This procedure allowed a comparison of percent members performing and relative percent time spent on tasks and groups of tasks.

### Survey Sample

The JI booklets mailed to the participants in the survey were monitored to ensure the final survey sample would be representative of the MAJCOM and paygrade groups. Table 1 lists the percentage distribution of assigned personnel in the career ladder (as of June 1996) by MAJCOM. Also shown in Table 1 is the percentage distribution of the final population by MAJCOM. Table 2 shows the survey sample representation across paygrades. The tables show that representation by MAJCOM and paygrade is good. The 893 respondents included in the

survey are from all three component groups (Active Duty, National Guard, and Reserve) and represent 61 percent of the total 1,457 2A7X1 personnel assigned to the career ladder (as of June 1996).

TABLE 1

COMMAND REPRESENTATION OF AFSC 2A7X1 SURVEY SAMPLE

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED*</u>	<u>PERCENT OF SAMPLE</u>
ANG	34	27
ACC	22	27
AFRES	18	16
AMC	8	10
USAFE	5	5
AETC	4	5
PACAF	4	6
AFSOC	2	1
AFMC	2	2
OTHER	1	1

TOTAL ASSIGNED - 1,457

TOTAL NUMBER ELIGIBLE - 1,322

TOTAL IN SAMPLE - 893

PERCENT OF ASSIGNED - 61

PERCENT OF ELIGIBLE - 68

\* As of October 1996

NOTE: AFSC 2A7X1 personnel not eligible for survey include those members with discharge, retirement, PCS, or hospital status, and those having less than 6 weeks in their present job



TABLE 2

## PAYGRADE REPRESENTATION OF AFSC 2A7X1 SURVEY SAMPLE

<u>PAYGRADE</u>	<u>PERCENT OF ASSIGNED*</u>	<u>PERCENT OF SAMPLE</u>
E-1	0	0
E-2	4	5
E-3	9	11
E-4	19	18
E-5	32	32
E-6	23	22
E-7	12	12
E-8	-	0
E-9	0	0

\* As of October 1996

- Indicates less than 1 percent

TABLE 3

## SELECTED BACKGROUND DATA FOR 2A7X1 CAREER LADDER JOBS

	TOOL AND EQUIP MAINTENANCE <u>JOB</u>	EXTRACTION AND DISASSEMBLY <u>JOB</u>	MILLING AND LATHE MACHINE OPERATOR <u>JOB</u>	AIRCRAFT METALS TECHNICIAN <u>CLUSTER</u>
NUMBER IN GROUP	7	5	39	722
PERCENT OF TOTAL SAMPLE	1%	1%	4%	81%
PERCENT CONUS	100%	100%	92%	85%
DAFSC DISTRIBUTION				
2A731	29%	0%	26%	17%
2A751	71%	100%	69%	56%
2A771	0%	0%	5%	27%
COMPONENT STATUS				
ACTIVE DUTY	43%	40%	31%	56%
NATIONAL GUARD	43%	60%	54%	27%
RESERVE	14%	0%	15%	17%
PREDOMINATE PAYGRADES	E2-E5	E4-E6	E5	E5-E6
AVERAGE MONTHS IN CAREER FIELD	35	85	24	89
AVERAGE MONTHS IN SERVICE	53	87	26	95
PERCENT IN FIRST ENLISTMENT	14%	0%	26%	20%
AVERAGE NUMBER TASKS PERFORMED	103	59	94	297
PERCENT SUPERVISING	0%	20%	3%	43%

TABLE 3 (CONTINUED)

## SELECTED BACKGROUND DATA FOR 2A7X1 CAREER LADDER JOBS

	TIG WELDER JOB	MILLING AND LATHE MACHINE INSTRUCTOR JOB	TIG WELDING INSTRUCTOR JOB	MANAGERIAL JOB
NUMBER IN GROUP	11	7	6	37
PERCENT OF TOTAL SAMPLE	1%	1%	1%	4%
PERCENT CONUS	91%	100%	100%	78%
DAFSC DISTRIBUTION				
2A731	0%	0%	0%	0%
2A751	82%	71%	50%	11%
2A771	18%	29%	50%	89%
COMPONENT STATUS				
ACTIVE DUTY	37%	100%	100%	92%
NATIONAL GUARD	45%	0%	0%	3%
RESERVE	18%	0%	0%	5%
PREDOMINATE PAYGRADES	E5-E6	E5	E6	E7
AVERAGE MONTHS IN CAREER FIELD	160	135	171	197
AVERAGE MONTHS IN SERVICE	164	142	184	205
PERCENT IN FIRST ENLISTMENT	9%	0%	0%	0%
AVERAGE NUMBER TASKS PERFORMED	198	111	127	115
PERCENT SUPERVISING	36%	29%	50%	97%

TABLE 4

## PERCENT TIME SPENT ON DUTY BY JOB\*

	TOOL AND EQUIPMENT MAINTENANCE JOB	EXTRACTION AND DISASSEMBLY JOB	MILLING AND LATHE MACHINE OPERATOR JOB	AIRCRAFT METALS TECHNICIAN CLUSTER
A General Aircraft Metals Activities	22	54	39	30
B Maintaining Tools or Equipment	41	10	17	19
C Lathe Operations	3	13	17	10
D Milling Machine Operations	2	1	10	6
E Power Cutoff Saw, Contour Saw, or Grinding Machine Operations	3	4	4	4
F Computer Numerical Controlled (CNC) Machine Setup Activities	-	-	1	1
G Oxyacetylene Operations	5	1	2	3
H Arc Welding or Resistance Welding Operations	4	3	2	2
I Tungsten Inert Gas (TIG) Shielded Welding Operations	13	5	4	8
J Metallic Inert Gas (MIG) Shielded Welding Operations	1	2	1	1
K Aircraft Engine Repair Activities	-	-	-	1
L Cleaning and Heat Treating Activities	2	3	1	2
M Metals Testing and Identification Procedures	1	1	1	2
N Aircraft or Missile Structure and Component Repair	-	-	-	1
O Management and Supervisory Activities	1	1	-	5
P Training Activities	-	-	-	1
Q General Administrative and Technical Order Activities	1	-	-	1
R General Supply and Equipment Activities	1	1	1	2

\* Columns may not add to 100 percent due to rounding

- Indicates less than 1 percent

TABLE 4 (CONTINUED)

PERCENT TIME SPENT ON DUTY BY JOB\*

	TIG WELDER JOB	MILLING AND LATHE MACHINE INSTRUCTOR JOB	TIG WELDING INSTRUCTOR JOB	MANAGERIAL JOB
A General Aircraft Metals Activities	22	19	7	13
B Maintaining Tools or Equipment	15	20	21	7
C Lathe Operations	3	15	-	-
D Milling Machine Operations	2	15	-	-
E Power Cutoff Saw, Contour Saw, or Grinding Machine Operations	2	7	2	-
F Computer Numerical Controlled (CNC) Machine Setup Activities	-	-	-	2
G Oxyacetylene Operations	5	-	7	-
H Arc Welding or Resistance Welding Operations	3	-	2	-
I Tungsten Inert Gas (TIG) Shielded Welding Operations	26	-	19	-
J Metallic Inert Gas (MIG) Shielded Welding Operations	1	-	-	-
K Aircraft Engine Repair Activities	5	-	1	-
L Cleaning and Heat Treating Activities	3	-	5	-
M Metals Testing and Identification Procedures	3	2	3	3
N Aircraft or Missile Structure and Component Repair	2	-	-	-
O Management and Supervisory Activities	4	8	14	49
P Training Activities	2	13	13	11
Q General Administrative and Technical Order Activities	-	-	2	6
R General Supply and Equipment Activities	1	-	3	7

\* Columns may not add to 100 percent due to rounding

- Indicates less than 1 percent

TABLE 5

COMPARISON OF CURRENT JOBS TO 1993 SURVEY JOBS

<u>1997 JOBS</u>	<u>1993 JOBS</u>
TOOL AND EQUIPMENT MAINTENANCE	SUPPLY ADMINISTRATION
EXTRACTION AND DISASSEMBLY	WELDING NCOIC
MILLING AND LATHE MACHINE OPERATOR	MACHINIST
AIRCRAFT METALS TECHNICIAN	GENERAL METALS TECHNOLOGY
TIG WELDER	WELDING
MANAGERIAL	SUPERVISORY MANAGEMENT
TIG WELDING INSTRUCTOR	WELDING INSTRUCTION
MILLING AND LATHE MACHINE INSTRUCTOR	

# CAREER LADDER STRUCTURE

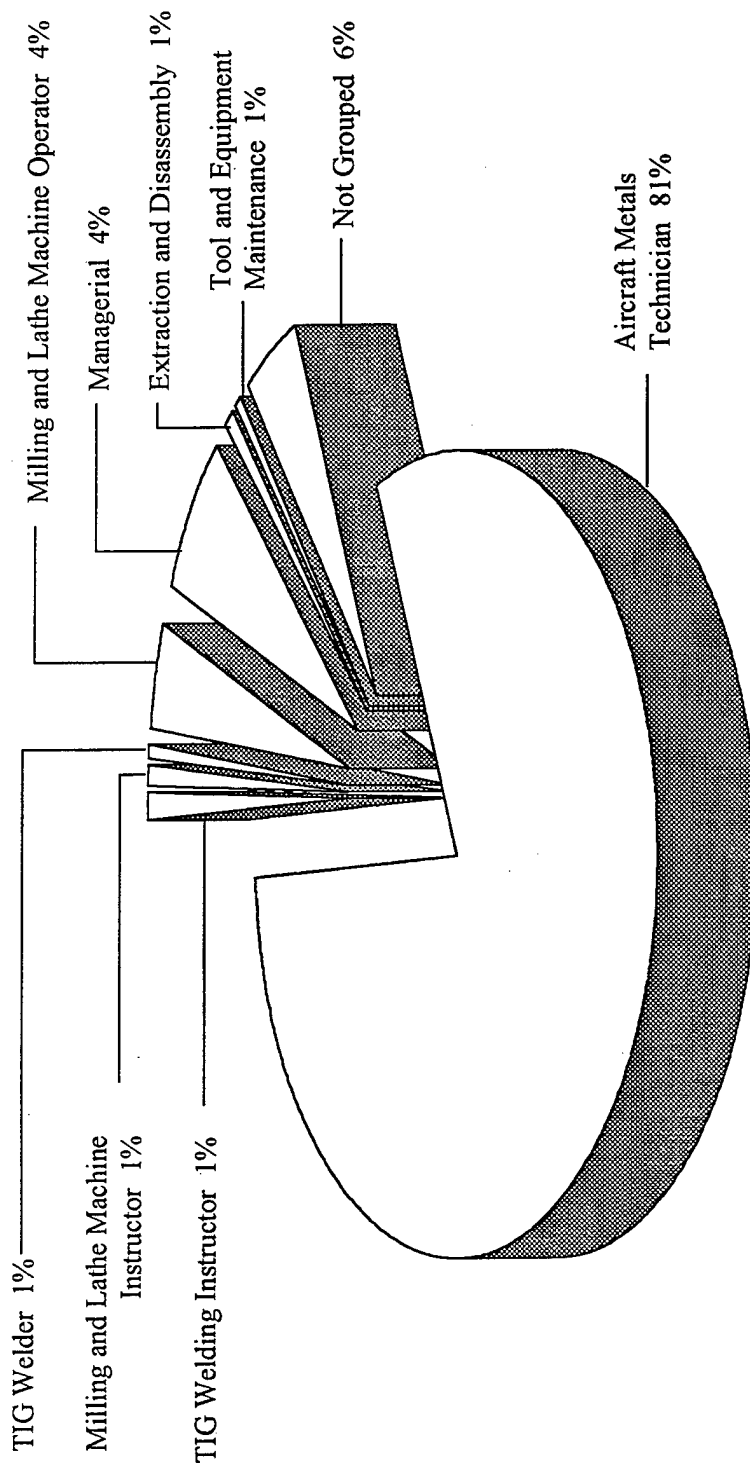


FIGURE 1

### Task Factor Administration

Job descriptions alone do not provide sufficient data for making decisions about career ladder documents or training programs. Task factor information is needed for a complete analysis of the career ladder. To obtain the needed task factor data, selected senior AFSC 2A7X1 personnel (generally E-6 or E-7 craftsmen) also completed a second booklet for either Training Emphasis (TE) or Task Difficulty (TD). These booklets were processed separately from the JIs. This information is used in a number of different analyses discussed in more detail in the report.

**Training Emphasis (TE).** TE is a rating of the amount of emphasis that should be placed on tasks in entry level training. The 44 senior AFSC 2A7X1 NCOs who completed booklets were asked to select tasks they felt should be taught to entry level personnel in some sort of structured training and then indicate how much training emphasis these tasks should receive, from 1 (extremely low emphasis) to 9 (extremely high emphasis). Structured training is defined as training provided at resident technical schools, field training detachments, mobile training teams, formal on the job training (OJT), or any other organized training method. The rater agreement among these 44 raters was high. The average TE rating was 2.28, with a standard deviation of 1.76. Any task with a TE rating of 4.04 is considered to have high TE.

**Task Difficulty.** TD is an estimate of the amount of time needed to learn how to do each task satisfactorily. The 45 senior NCOs who completed TD booklets were asked to rate the difficulty of each task using a 9-point scale (extremely low to extremely high). Interrater reliability was high. Ratings were standardized so tasks have an average difficulty of 5.00 and a standard deviation of 1.00. Any task with a TD rating of 6.00 or above is considered difficult to learn.

### **SPECIALTY JOBS** (Career Ladder Structure)

The structure of jobs in the Aircraft Metals Technology career ladder were based on the similarity of tasks performed and percent time spent. To aid in determining career ladder structure, an automated job clustering program compares job descriptions for individuals in the survey sample. The automated job clustering program then selects the most similar job descriptions based on tasks performed and the time spent on those tasks. The computer program then finds all other individuals that are similar and then adds them to the group. The program continues to group individuals together or separates them into other groups. The program continues until all members are grouped. The result is a pattern of jobs that make the AFSC 2A7X1 career ladder.



The basic group used in the hierarchical clustering process is the Job. When two or more jobs have a substantial degree of similarity in tasks performed and time spent performing tasks, they are grouped together and identified as a Cluster. The structure of the career ladder is then defined in terms of jobs and clusters of jobs.

### Structure Overview

In this survey, seven jobs and one cluster were identified. These are listed and the descriptions of each are provided. The stage number (ST) beside each job title is a computer generated code number, and the letter N within parentheses corresponds to the number of personnel in each group.

- I. TOOL AND EQUIPMENT MAINTENANCE JOB (ST054, N=7)
- II. EXTRACTION AND DISASSEMBLY JOB (ST041, N=5)
- III. MILLING AND LATHE MACHINE OPERATOR JOB (ST042, N=39)
- IV. AIRCRAFT METALS TECHNICIAN CLUSTER (ST067, N=722)
  - A. Base Level Aircraft Metals Technician (ST112)
  - B. Senior Level Aircraft Metals Technician (ST109)
  - C. Shift and Shop Supervisor (ST093)
- V. TIG WELDER JOB (ST066, N=11)
- VI. MILLING AND LATHE MACHINE INSTRUCTOR JOB (ST094, N=7)
- VII. TIG WELDING INSTRUCTOR JOB (ST047, N=6)
- VIII. MANAGERIAL JOB (ST043, N=37)
- IX. NOT GROUPED (N=59)

The AFSC 2A7X1 personnel forming these clusters and jobs account for 94 percent of the survey sample (see Figure 1). The remaining 6 percent are listed as "not grouped." These 59 personnel perform sets of tasks that differ from those tasks performed by the identified groups. Examples of job titles identified by these survey respondents were quality assurance inspector, NCOIC--TALS processing, and medical research machinist. Because of the differences in tasks performed, these personnel could not be merged with any identifiable job.

Two tables in this section provide background information about the clusters and jobs mentioned. Table 3 displays selected background information, such as DAFSC distributions across each group, average months in service (TAFMS), average number of tasks performed, and the percentage of group members supervising. The data in Table 4 details the relative amount of time spent across each of the 18 duties for the identified survey groups. Also included in this report is an Appendix A listing tasks performed by members in each of the jobs identified.

### Job Descriptions

I. TOOL AND EQUIPMENT MAINTENANCE JOB (ST054, N=7). The 7 members of this job are identified by their specialization in Duty B, maintaining tools or equipment, where they spend 41 percent of their time (over twice as much as any other group). Emphasis on this duty indicates this job is technical in nature and is quite limited. Members of this group are tasked with cleaning or lubricating equipment and sanding, scraping, painting, or lubricating various work areas and metals. Representative tasks performed by these seven personnel include:

- inspect tungsten inert gas (TIG) welding equipment
- clean or store handtools
- clean or lubricate milling machines
- clean or store cutters or cutting tools
- clean, scrape, or paint worktables
- inspect arc welding equipment
- clean or lubricate power cutoff saws
- sand, scrape, paint, or lubricate exposed metal surfaces on shop equipment

These 7 members average 103 tasks performed, with 60 of those accounting for half their time spent. Members of this group average 53 months TAFMS and 35 months TICF. These members are in the paygrades of E-2 through E-5, and most hold a 5-skill level. None of the Tool and Equipment Maintenance personnel are currently supervising others.

II. EXTRACTION AND DISASSEMBLY JOB (ST041, N=5). As referenced in AFMAN 36-2108 *Specialty Descriptions*, Aircraft Metals Technology personnel disassemble, assemble, and fit component parts using machine screws, bolts, rivets, press fits, and welding techniques. The five members of this job are unique from others because primary tasks performed focus around the extraction of parts and disassembly of components, such as removing damaged studs and removing or replacing inserts, such as rosans or helicoils. The job is very elementary, as members spend 54 percent of their time performing tasks in Duty A, general aircraft metals technologies activities (see Table 4). Representative tasks performed by these members include:

- remove damaged screws
- remove or replace damaged bolts
- remove frozen or seized parts
- remove or replace bushings
- rework internal threads with handtools, such as taps or threading tools
- remove or replace bearings
- rework external threads with handtools, such as taps or threading tools
- assemble or disassemble parts with presses

Members of the Extraction and Disassembly Job average 59 tasks performed (the lowest of any group), further illustrating the limitations of the job. These 5 personnel average 87 months TAFMS, with 85 of those months being spent in the career field. The predominate paygrades for personnel in this group are E-4 through E-6, and all five members hold a 5-skill level. Currently, one person indicates supervising others.

### III. MILLING AND LATHE MACHINE OPERATOR JOB (ST042, N=39).

Fabrication of components and assemblies for aerospace weapon systems and related support equipment is paramount to the Air Force mission. As such, there are personnel who specialize in lathe and milling machine operations. Thirty-four percent of this group's time is spent performing tasks in Duties C (Lathe operations) and D (Milling Machine operations). The 39 members of this job spend most of their time performing tasks using either a milling machine or lathe, such as drilling holes on lathes, facing or centering drill materials on lathes, or performing milling operations using end mills. Representative tasks performed by members of this group are:

- select lathe cutting tools
- select and set speeds and feeds for lathe operations
- face or center drill materials on lathes
- select tool holders or lathe attachments
- perform milling operations using end mills
- select and set speeds and feeds for milling operations
- drill holes with milling machines
- counterbore or countersink holes on lathes

The average number of tasks performed by Milling and Lathe Machine Operators is the key factor that distinguishes this group from other similar technical groups. Members of this group average 94 tasks performed, which correlates to more relative time spent on each task. Personnel in this group average 26 months TAFMS and 24 months TICE, the lowest of any group (see

Table 3). Only 3 percent of all members in this group indicate that they currently supervise others.

IV. AIRCRAFT METALS TECHNICIAN CLUSTER (ST067, N=722). This cluster represents the core job of the Aircraft Metals Technology career field. The 722 members in this cluster represent the largest identified group, encompassing 81 percent of the survey sample. Tasks performed by these members encompasses the essence of Aircraft Metals Technology activities as members interpret blueprints, work materials on lathes, milling machines and saws, and weld materials. Because this is the core job of the Aircraft Metals Technology career field, members perform relatively high amounts of time performing tasks in all duties (see Table 4). They spend 30 percent of their time performing general aircraft metals technology activities, 19 percent maintaining tools or equipment, 10 percent performing lathe operations, and 8 percent welding with TIG equipment. Tasks performed by Aircraft Metals Technicians include:

- remove damaged screws
- perform local manufacture of items
- determine dimensions from precision measurement tools, such as micrometers, vernier calipers, or dial indicators
- deburr machined surfaces
- inventory composite tool kits (CTKs)
- drill holes on lathes
- perform straight turning operations on lathes
- face or center drill materials on lathes

Personnel in this cluster average 96 months TAFMS, 89 of which have been spent in the career field. The majority of personnel in this cluster are in the paygrades of E-4 through E-6, and most hold a 5-skill level (see Table 3). Forty-three percent of all members of this group are currently supervising others. Members average 297 tasks performed, the most of any group. Because of this, the relative amount of time spent on any one task is quite low.

Within this cluster there are three different jobs. There are Base Level Aircraft Metal Technicians who are predominately E-4s and E-5s holding a 5-skill level. They perform an average of 169 tasks, the majority of which are general aircraft metals technologies activities. As the name implies, the Base Level Aircraft Metals Technician position is entry level. Evidence of this is shown in the low percentage of personnel holding supervisory positions (12 percent), average number of tasks performed relative to the other jobs within the cluster, and the lower relative skill levels. The second job in the cluster is comprised of Senior Level Aircraft Metals Technicians. These members are mostly E-5s and E-6s. Similar to the Base Level Aircraft Metals Technicians, these members primarily hold 5-skill levels. Members in this group average 328 tasks performed. Forty-nine percent of all Senior Level Aircraft Metals Technicians are currently supervising others. Though these members are distinguished from the Base Level Technicians due to their higher paygrades, higher average of tasks performed, and higher percentage of personnel

in supervisory roles, the nature of work performed is the same as that of the Base Level personnel. Members of the Senior Level Technician group focus their time on general aircraft metals technologies activities. Lastly, there are shift and shop supervisors in the Aircraft Metals Technician Cluster. The shift and shop supervisors are unique within this cluster because they are supervisory personnel who also periodically perform general aircraft metals technologies activities. These members have the highest average TAFMS of any group in the cluster. Members of this group are in the paygrades of E-5 through E-7. Seventy-five percent of all shift and shop supervisors hold the 7-skill level.

V. TIG WELDER JOB (ST066, N=11). The 11 members of this job spend 25 percent of their time performing TIG welding activities, more than any other group (see Table 4). Emphasis in this specialized technical function makes these personnel unique. Members also spend large portions of their time (22 percent) performing general aircraft metals technologies activities and maintaining tools and equipment (15 percent). Representative tasks performed by TIG welders are:

- weld aluminum or aluminum alloys with TIG equipment in the horizontal position
- weld aluminum or aluminum alloys with TIG equipment in the flat position
- weld carbon steels with TIG equipment in the flat position
- weld carbon steels with TIG equipment in the horizontal position
- weld hastelloy with TIG equipment in the vertical position
- weld inconel with TIG equipment in the flat position
- weld low alloy steels with TIG equipment in the horizontal position
- weld titanium or titanium alloys with TIG equipment in the flat position
- perform operator maintenance on stationary TIG equipment

TIG welding members are primarily in the paygrades of E-5 and E-6 (10 of the 11 members) and most hold a 5-skill level. Average TAFMS for members of this job is 164 months and average TICF is 160 months, both of which are the highest for any technical job identified (see Table 3). Thirty-six percent of all TIG welders are in supervisory positions.

VI. MILLING AND LATHE MACHINE INSTRUCTOR JOB (ST094, N=7). In almost all career fields there needs to be a cadre of training personnel to provide quality entry level classroom and hands-on training. The seven members of the Milling and Lathe Machine Instructor Job are found at Aberdeen Proving Ground MD, site of the 2A7X1 technical training school. These 7 members are found maintaining tools and equipment (20 percent of their time), performing general aircraft metals technologies activities (19 percent), performing milling machine

operations (15 percent), performing lathe operations (15 percent), performing training activities (13 percent), along with other tasks. Representative tasks performed by Milling Machine and Lathe instructors are:

- determine trigonometric calculations
- perform milling operations using end mills
- maintain training records or files
- develop training materials or aids
- conduct formal course classroom training
- evaluate progress of trainees
- align milling machine vises or attachments
- drill holes on lathes

The complicated subject being taught by these personnel is reflected in the high average number of tasks performed. Members perform an average of 111 tasks during their duty time. These trainers are in the E-5 and E-6 paygrades and most hold a 5-skill level. Members of this group average 142 months TAFMS, of which 135 were spent in the career field. Twenty-nine percent of all Milling and Lathe machine instructors are supervising others.

VII. TIG WELDING INSTRUCTOR JOB (ST047, N=6). The six members of this group are also found at Aberdeen Proving Ground MD instructing entry level personnel in technical functions. These members are distinguished by their specialized instruction in TIG welding activities. These 6 members spend 20 percent of their time maintaining tools and equipment, 19 percent performing TIG shielded welding operations, 14 percent performing management and supervisory activities, and 13 percent performing training activities. Representative tasks performed by TIG welding instructors are:

- conduct formal course classroom training
- remove or replace TIG welding equipment components or accessories
- weld cobalt alloys with TIG equipment in the flat position
- counsel trainees on training progress
- weld inconel with TIG equipment in the flat position
- weld magnesium or magnesium alloys with TIG equipment in the flat position
- inspect tungsten inert gas (TIG) welding equipment
- weld precipitation-hardening (PH) stainless steels with TIG equipment in the flat position

TIG welding instructor personnel are primarily E-6s and hold 5- and 7-skill levels. These personnel have an average of 184 months TAFMS and 171 months TICS, second most of any group. These 6 members average 127 tasks performed during their duty time, again high for a training position. Fifty percent of all TIG welding instructors are currently supervising others.

VIII. MANAGERIAL JOB (ST043, N=37). As with most specialties, there are non-technical jobs performed by senior level personnel. The 37 members of the managerial job account for 4 percent of the survey sample. They spend almost half their duty day (49 percent) performing management and supervisory activities, nearly 4 times greater than any other group (see Table 4). Members of this group specialize in managerial tasks and perform few, if any technical tasks. Managers are found supervising military personnel, participating in general meetings, establishing work assignments, and evaluating personnel for compliance with performance standards. Representative tasks performed by managerial personnel include:

- coordinate aircraft metals technologies shop activities with other agencies
- conduct supervisory performance feedback sessions
- write performance reports or supervisory appraisals
- counsel subordinates concerning personal matters
- conduct general meetings, such as staff meetings, briefings, conferences, or workshops
- assign personnel to work areas or duty positions
- develop or establish work schedules

Managerial personnel are the most senior of any group identified. Managerial members are predominately E-7s, and most hold a 7-skill level. Members average 205 months TAFMS and 197 months TICS, the highest of all groups. Managerial members perform an average of 115 tasks during their duty time. As the job name implies, these personnel are in supervisory positions. Currently, 97 percent of all managerial members are supervising others.

#### Comparison of Current Survey to Previous Survey

The results of this specialty job analysis were compared to the results from the OSR published in 1993 (see Table 5). The career structure is very similar to that reported in the 1993 publication. In 1993, 79 percent of all members were in the General Metals Technology Job, where they focused on designing, fabricating, reworking, and repairing metal aircraft parts or other components, using a variety of metalworking machines or handtools. Extremely similar to that is the Aircraft Metals Technician Cluster, where members conduct a variety of tasks associated with fabricating, reworking, and repairing metal aircraft parts and components. Also similar are the welding, welding instructor, machinist instructor, and supervisory management positions. Inclusions into the 1997 survey are the Tool and Equipment Maintenance, Extraction

and Disassembly, and Milling and Lathe Machine Operator jobs. Comparisons of job structure between the 1997 and 1993 surveys indicate the 2A7X1 career ladder has remained stable over time.

## ANALYSIS OF CAREER LADDER PROGRESSION

An analysis of DAFSC groups, along with the study of career ladder structure, is an integral aspect in analyzing each occupational survey. The DAFSC helps to identify both similarities and differences in task and duty performance at the skill levels. All this information may then be used to evaluate how well AFMAN 36-2108 *Specialty Descriptions* and the Specialty Training Standard (STS) reflect what is being accomplished in the career field.

The comparison of DAFSCs has been divided into an Active Duty, National Guard, and Reserve sample. The Active Duty sample contains members holding 3-, 5-, and 7-skill levels. The National Guard and Reserve samples contain members holding 5- and 7-skill levels.

Tables 6, 7, and 8 of this report display the distribution of DAFSC group members across career ladder jobs for Active Duty, National Guard, and Reserve, respectively. These tables indicate the jobs performed in the aircraft metals technician cluster are core to the career field. Table 6 shows that 87 percent of all Active Duty 3-skill level members are assigned to the Aircraft Metals Technician Cluster. As members make their way to the 7-skill level, 53 percent are still in the Aircraft Metals Technician Cluster. Table 7 shows that 74 percent of all National Guard 5-skill level members and 93 percent of all 7-skill level members are working in the Aircraft Metals Technician Cluster. Further support of the Aircraft Metals Technician Cluster being the core job is seen in Table 8, as 79 percent of all 5-skill level personnel and 93 percent of all 7-skill level members are assigned. These three tables also indicate that typical career ladder progression occurs. Members of all three component groups work their way out of the entry level technical jobs and into managerial positions.

Table 9 shows the average time spent on duties by Active Duty DAFSC groups. The 3-skill level members spend a great deal of time (33 percent) performing general aircraft metals technologies activities, maintaining tools or equipment (22 percent), and performing lathe operations (11 percent). The 5-skill level members are still spending large portions of their time performing tasks in technical duties. They spend 29 percent of their time performing general aircraft metals technologies activities and another 18 percent maintaining tools or equipment. However, the 5-skill level members are slowly spending increased time performing non-technical tasks in Duties O (6 percent) and P (2 percent). The 7-skill level members show the transition from specialization in technical duties to managerial roles. The 7-skill level members spend a large portion of their duty time (30 percent) focusing on management and supervisory activities (Duty O), 5 times more than the 5-skill level members. They also show increased time spent on training activities (Duty P, 6 percent).



Table 10 indicates that the National Guard 5-skill level members are assigned technical duties as they spend 34 percent of their time performing general aircraft metals technologies activities, tool or equipment maintenance (19 percent), and lathe operations (12 percent). As members move to the 7-skill level they still perform tasks in the technical duties as they are spending 27 percent of their duty time in Duty A, performing general aircraft metals technologies activities. However, these members are performing more supervisory and training activities as they are spending 8 percent of their duty time in Duty O, and 3 percent in Duty P.

The Reserve 5-skill level members are specializing in technical tasks during their duty day (see Table 11). These 86 personnel are spending 32 percent of their time on general aircraft metals technologies activities, 19 percent maintaining tools or equipment, and 10 percent performing lathe operations. They perform all other duties with varying degrees of frequency. As the Reserve members make their way into the 7-skill level they see a small increase in supervisory responsibilities. Though the 7-skill level personnel are still isolating on technical duties, 7 percent of their time is spent on management and supervisory activities (Duty O).

TABLE 6  
DISTRIBUTION OF ACTIVE DUTY GROUP MEMBERS ACROSS  
CAREER LADDER JOB GROUPS\*  
(PERCENT IN JOB)

	DAFSC 2A731 (N=142)	DAFSC 2A751 (N=254)	DAFSC 2A771 (N=110)
I Tool and Equipment Maintenance Job	1	-	0
II Extraction and Disassembly Job	0	1	0
III Milling and Lathe Machine Operator Job	7	1	0
IV Aircraft Metals Technician Job	87	87	53
V TIG Welder Job	0	1	1
VI Milling and Lathe Machine Instructor Job	0	2	1
VII TIG Welding Instructor Job	0	1	3
VIII Managerial Job	0	1	28
IX Not Grouped	5	6	14

\* Columns may not add to 100 percent due to rounding

- Indicates less than 1 percent

TABLE 7  
DISTRIBUTION OF NATIONAL GUARD GROUP MEMBERS ACROSS  
CAREER LADDER JOB GROUPS\*  
(PERCENT IN JOB)

	DAFSC 2A751 (N=153)	DAFSC 2A771 (N=90)
I Tool and Equipment Maintenance Job	2	0
II Extraction and Disassembly Job	2	0
III Milling and Lathe Machine Operator Job	13	1
IV Aircraft Metals Technician Job	74	93
V TIG Welder Job	3	1
VI Milling and Lathe Machine Instructor Job	0	0
VII TIG Welding Instructor Job	0	0
VIII Managerial Job	0	1
IX Not Grouped	6	4

\* Columns may not add to 100 percent due to rounding

TABLE 8  
DISTRIBUTION OF RESERVE GROUP MEMBERS ACROSS  
CAREER LADDER JOB GROUPS\*  
(PERCENT IN JOB)

	DAFSC 2A751 (N=86)	DAFSC 2A771 (N=58)
I Tool and Equipment Maintenance Job	0	0
II Extraction and Disassembly Job	0	0
III Milling and Lathe Machine Operator Job	6	2
IV Aircraft Metals Technician Job	79	93
V TIG Welder Job	2	0
VI Milling and Lathe Machine Instructor Job	0	0
VII TIG Welding Instructor Job	0	0
VIII Managerial Job	1	2
IX Not Grouped	12	3

\* Columns may not add to 100 percent due to rounding

TABLE 9

## AVERAGE TIME SPENT ON DUTIES BY ACTIVE DUTY DAFSC GROUPS\*

	DAFSC 2A731 (N=142)	DAFSC 2A751 (N=254)	DAFSC 2A771 (N=110)
A Aircraft metals technologies activities	33	29	20
B Tools or equipment maintenance	22	18	12
C Lathe Operations	11	9	4
D Milling Machine Operations	7	6	3
E Power Cutoff Saw, Contour Saw, or Grinding Machine Operations	4	3	2
F Computer Numerical Controlled (CNC) Machine Setup Activities	-	1	1
G Oxyacetylene Operations	3	3	1
H Arc Welding or Resistance Welding Operations	2	2	1
I Tungsten Inert Gas (TIG) Shielded Welding Operations	9	9	5
J Metallic Inert Gas (MIG) Shielded Welding Operations	1	1	-
K Aircraft Engine Repair Activities	1	1	1
L Cleaning and Heat Treating Activities	2	2	1
M Metals Testing and Identification Procedures	2	2	2
N Aircraft or Missile Structures and Components Repair	1	1	1
O Management and Supervisory Activities	1	6	30
P Training Activities	-	2	6
Q General Administrative and Technical Order System Activities	-	1	5
R General Supply and Equipment Activities	1	3	5

\* Columns may not add to 100 percent due to rounding

- Indicates less than 1 percent

TABLE 10

## AVERAGE TIME SPENT ON DUTIES BY NATIONAL GUARD DAFSC GROUPS\*

	DAFSC 2A751 (N=153)	DAFSC 2A771 (N=90)
A Aircraft metals technologies activities	34	27
B Tools or equipment maintenance	19	19
C Lathe Operations	12	9
D Milling Machine Operations	8	5
E Power Cutoff Saw, Contour Saw, or Grinding Machine Operations	5	4
F Computer Numerical Controlled (CNC) Machine Setup Activities	-	-
G Oxyacetylene Operations	3	3
H Arc Welding or Resistance Welding Operations	3	3
I Tungsten Inert Gas (TIG) Shielded Welding Operations	8	7
J Metallic Inert Gas (MIG) Shielded Welding Operations	1	1
K Aircraft Engine Repair Activities	1	1
L Cleaning and Heat Treating Activities	2	2
M Metals Testing and Identification Procedures	1	3
N Aircraft or Missile Structures and Components Repair	1	1
O Management and Supervisory Activities	1	8
P Training Activities	-	3
Q General Administrative and Technical Order System Activities	-	1
R General Supply and Equipment Activities	1	3

\* Columns may not add to 100 percent due to rounding

- Indicates less than 1 percent

TABLE 11

## AVERAGE TIME SPENT ON DUTIES BY RESERVE DAFSC GROUPS\*

	DAFSC 2A751 (N=86)	DAFSC 2A771 (N=58)
A Aircraft metals technologies activities	32	28
B Tools or equipment maintenance	19	18
C Lathe Operations	10	9
D Milling Machine Operations	7	6
E Power Cutoff Saw, Contour Saw, or Grinding Machine Operations	5	4
F Computer Numerical Controlled (CNC) Machine Setup Activities	1	1
G Oxyacetylene Operations	3	3
H Arc Welding or Resistance Welding Operations	2	3
I Tungsten Inert Gas (TIG) Shielded Welding Operations	9	8
J Metallic Inert Gas (MIG) Shielded Welding Operations	1	1
K Aircraft Engine Repair Activities	1	1
L Cleaning and Heat Treating Activities	2	2
M Metals Testing and Identification Procedures	1	3
N Aircraft or Missile Structures and Components Repair	1	1
O Management and Supervisory Activities	3	7
P Training Activities	1	2
Q General Administrative and Technical Order System Activities	1	1
R General Supply and Equipment Activities	1	2

\* Columns may not add to 100 percent due to rounding

- Indicates less than 1 percent

### Active Duty Skill Level Descriptions

**DAFSC 2A731.** There are 142 members who make up the Active Duty 3-skill level group. This group represents 16 percent of the survey sample. These members are almost solely technical workers as they dedicate their time to general aircraft metals technologies activities, such as welding repair powered or nonpowered aerospace ground equipment (AGE), performing straight turning operations on lathes, and deburring machined surfaces. DAFSC 2A731 members perform an average of 228 tasks and average 26 months TAFMS. They are found in only three job groups (see Table 6). Table 12 displays representative tasks performed by DAFSC 2A731 members. It shows that most tasks are technical, such as cutting threads with hand taps and dies, cleaning or lubricating milling machines, and disposing of scrap metal, chips, or shavings.

**DAFSC 2A751.** There are 254 members who make up the Active Duty 5-skill level group. These personnel comprise the biggest DAFSC group and account for 28 percent of the survey population. These members are still almost solely technical in nature. However, while the Active Duty 3-skill level members are only in three different job groups, the Active Duty 5-skill level group has representatives in all (see Table 6). As a group, the Active Duty 5-skill level members average 110 months TAFMS. These members perform an average of 252 tasks in which 128 account for over half of their time. Table 13 displays representative tasks performed by group members. This shows tasks performed are still technical in nature as members are removing or replacing damaged bolts, removing or replacing bushings, and performing straight turning operations on lathes. Table 14 displays tasks differentiating tasks between Active Duty 2A731 and 2A751 members. This table shows that numerous Active Duty 5-skill level members are performing supervisory tasks compared to very few Active Duty 3-skill level members.

**DAFSC 2A771.** The 110 members of this group account for 12 percent of the survey population. These group members are focusing their efforts on managerial duties, spending 30 percent of their time performing management and supervisory activities (see Table 9). As members make their way into the 7-skill level there is a large jump in the percentage of members in the Managerial Job; 28 percent of all 7-skill level members are assigned to the Managerial Job, whereas only 1 percent of all 5-skill level members were in the Managerial Job (see Table 6). Members of this group average 216 tasks performed. Average TAFMS for these personnel is 203 months. Table 15 lists representative tasks performed by Active Duty 7-skill level members. It can be seen that these personnel are no longer specializing in technical tasks. The majority of tasks performed by this group are managerial, such as conducting supervisory feedback sessions, supervising military personnel, and determining or establishing work assignments or priorities. Table 16 displays tasks best differentiating Active Duty 5-skill level members from Active Duty 7-skill level members. From this table it can be seen that there are far fewer 7-skill level members performing technical tasks associated with the Aircraft Metals Technician Cluster. It can also be seen that far more 7-skill level members are performing managerial and supervisory tasks than the 5-skill level members.



### National Guard Skill Level Descriptions

**DAFSC 2A751.** There are 153 members in the National Guard 5-skill level group, accounting for 17 percent of the survey population. These members are performing technical tasks during their duty time, such as removing damaged screws, cutting threads with hand taps and dies, and boring straight holes on lathes. They average 217 tasks performed. Table 17 lists tasks representative of this group. This table shows that the majority of tasks performed are from Duties A, C, and D. All of these tasks are indicative of the technical function of the Aircraft Metals Technician Cluster.

**DAFSC 2A771.** There are 90 members comprising the National Guard 7-skill level group. These personnel are mostly found in the Aircraft Metals Technician Cluster (see Table 7). The work performed by these 90 members is still technical in nature as members deburr machined surfaces, clean or store hand tools, and perform local manufacture of items. Table 18 lists representative tasks performed by National Guard 7-skill level members. It clearly shows the work performed is still of the technical nature. Table 19 lists tasks which best differentiate National Guard 5- and 7-skill level groups. This table shows that 7-skill level members are differentiated from the 5-skill level members because of their increased managerial responsibilities. It can be inferred from this table that the 7-skill level members are senior level aircraft metals technicians who are still performing the core work yet are making the transition to managerial roles.

### Reserve Skill Level Descriptions

**DAFSC 2A751.** There are 86 members who make up the Reserve 5-skill level group. These personnel, similar to the Active Duty 3- and National Guard 5-skill level groups, are almost purely technical in nature. Reserve 5-skill level members are found drilling holes on lathes, deburring machined surfaces, and disposing of scrap metal, chips, or shavings. These personnel average 261 tasks performed during their duty time. Table 20 lists representative tasks performed by Reserve 5-skill level group members. It shows that members are focusing their efforts on tasks primarily from Duties A, B, and C, all of which are technical duties.

**DAFSC 2A771.** The 58 members comprising the Reserve 7-skill level group are principally assigned to the Aircraft Metals Technician Cluster (see Table 8). These members are performing technical tasks as they remove frozen or seized parts, lay out materials for machine work, and perform milling operations using end mills. Members of this group average 363 tasks performed, more than any other DAFSC group. Table 21 lists example tasks performed by these personnel and shows that members are performing core tasks. Table 22 lists tasks which best differentiate between Reserve 5- and 7-skill level groups. This table reveals that 7-skill level members are differentiated from the 5-skill level members due to their performance of

managerial and training tasks (this is further evidenced by higher number of average tasks performed). This table infers that Reserve 7-skill level members are senior level aircraft metal technicians performing technical tasks, but transitioning into managerial roles.

### Summary

The jobs performed by 3- and 5-skill level personnel are technical. Members of all three component groups are mostly found in the Aircraft Metals Technician Cluster, which epitomizes the core job of the career field. Active Duty members move from the Aircraft Metals Technician Cluster into managerial and training roles as they acquire the 7-skill level.

The National Guard sample is similar to the Active Duty sample as members take on managerial tasks as they gain higher skill level rankings. Most of the National Guard 5- and 7-skill level members are grouped in the Aircraft Metals Technician Cluster, however, the 7-skill level members still are exposed to managerial and training tasks.

Reserve personnel also show typical career ladder progression as they shift from technical tasks to a mixture of technical and managerial. The 5-skill level members are found solely performing technical tasks in the Aircraft Metals Technician Cluster. However, the 7-skill level members take on managerial tasks as they move into senior positions.

The data show that all three component groups generally perform the same tasks and duties. Tables 23 and 24 are provided for easy cross reference among Active Duty, National Guard, and Reserve 5-skill level personnel. These tables display 5-skill level performance of duties and tasks, respectively. Table 23 shows that all three groups are focused heavily on Duties A, B, and C. Table 24 further supports the technical nature of all 5-skill level members by the high percentages of members performing specific technical tasks. Tables 25 and 26 are also provided for easy cross reference of all 3 component groups. These two tables list duties and tasks performed by 7-skill level component group members, respectively. Table 25 shows that all three component groups still focus heavily on Duty A, performing general aircraft metals technologies activities. However, it is also seen that the Active Duty 7-skill level members are heavily performing Duty O, management and supervisory activities. Table 26 shows that many Active Duty 7-skill level members are performing managerial tasks, while few of the National Guard or Reserve 7-skill level members are performing these same tasks. Table 26 further shows that many of the National Guard and Reserve 7-skill level members are still performing general tasks, while few Active Duty personnel are.

TABLE 12

REPRESENTATIVE TASKS PERFORMED BY ACTIVE DUTY  
DAFSC 2A731 GROUP MEMBERS  
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>		2A731 (N=142)
A30	Cut threads with hand taps and dies	97
I421	Weld carbon steels with TIG equipment in the flat position	97
B147	Clean or lubricate milling machines	95
A98	Remove damaged screws	94
C248	Drill holes on lathes	94
B152	Clean or store handtools	94
A48	Dispose of scrap metal, chips, or shavings	93
A31	Deburr machined surfaces	92
C266	Select and set speeds and feeds for lathe operations	92
C249	Face or center drill materials on lathes	92
C264	Select lathe cutting tools	92
B172	Maintain personal protective gear	90
A4	Calculate allowances and tolerances	90
B170	Inventory composite tool kits (CTKs)	88
A86	Perform local manufacture of items	88
A66	Locate information in technical orders (TOs), standards, or specifications	88
C260	Perform straight turning operations on lathes	88
A128	Weld repair powered or nonpowered AGE	85
A84	Perform flight line safety procedures	82
A40	Determine dimensions from precision measurement tools, such as micrometers, vernier calipers, or dial indicators	78

TABLE 13

REPRESENTATIVE TASKS PERFORMED BY ACTIVE DUTY  
DAFSC 2A751 GROUP MEMBERS  
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>		<u>2A751</u> <u>(N=254)</u>
C266	Select and set speeds and feeds for lathe operations	91
C248	Drill holes on lathes	90
A109	Remove or replace inserts, such as rosans or helicoils	90
A31	Deburr machined surfaces	89
A106	Remove or replace damaged bolts	89
B170	Inventory composite tool kits (CTKs)	88
A66	Locate information in technical orders (TOs), standards, or specifications	88
A86	Perform local manufacture of items	88
B172	Maintain personal protective gear	88
A105	Remove or replace bushings	88
C249	Face or center drill materials on lathes	88
C264	Select lathe cutting tools	88
A98	Remove damaged screws	87
C260	Perform straight turning operations on lathes	87
A30	Cut threads with hand taps and dies	87
A59	Inspect parts	86
A40	Determine dimensions from precision measurement tools, such as micrometers, vernier calipers, or dial indicators	83
A60	Inspect work areas for safe working environments	82
A128	Weld repair powered or nonpowered AGE	79

TABLE 14

TASKS WHICH BEST DIFFERENTIATE BETWEEN ACTIVE DUTY  
DAFSC 2A731 AND 2A751 PERSONNEL  
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	<u>DAFSC 2A731</u>	<u>DAFSC 2A751</u>	<u>DIFFERENCE</u>
E311	58	33	25
A10	68	52	16
B147	95	81	14
B148	89	76	13
C230	50	37	13
E318	38	25	13
C228	54	42	12
A116	47	36	11
*****	*****	*****	*****
O597	2	51	-49
O602	4	51	-47
P685	6	52	-46
O669	4	46	-42
O606	10	52	-42
P683	17	57	-40
O601	7	45	-38
O647	5	43	-38
P696	5	42	-37

TABLE 15

REPRESENTATIVE TASKS PERFORMED BY ACTIVE DUTY  
DAFSC 2A771 GROUP MEMBERS  
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>		<u>2A771 (N=110)</u>
O597	Conduct supervisory performance feedback sessions	86
O669	Supervise military personnel	81
O606	Determine or establish work assignments or priorities	81
O598	Conduct safety inspections of equipment or facilities	81
O653	Participate in general meetings, such as staff meetings, briefings, conferences, or workshops, other than conducting	80
O635	Evaluate personnel for compliance with performance standards	80
A60	Inspect work areas for safe working environments	80
O602	Counsel subordinates concerning personal matters	80
O595	Conduct self-inspections or self-assessments	78
O647	Inspect personnel for compliance with military standards	77
O594	Conduct general meetings, such as staff meetings, briefings, conferences, or workshops	73
O612	Develop or establish work schedules	73
O591	Assign personnel to work areas or duty positions	73
A59	Inspect parts	73
O599	Conduct supervisory orientations for newly assigned personnel	72
O674	Write performance reports or supervisory appraisals	71
A66	Locate information in technical orders (TOs), standards, or specifications	71
O601	Coordinate aircraft metals technologies shop activities with other agencies	70
O667	Schedule work assignments or priorities	69
O639	Evaluate workload requirements	68
O614	Direct training functions	66
A3	Bench check parts or assemblies	61

TABLE 16

TASKS WHICH BEST DIFFERENTIATE BETWEEN ACTIVE DUTY  
DAFSC 2A751 AND 2A771 PERSONNEL  
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	<u>DAFSC 2A751</u>	<u>DAFSC 2A771</u>	<u>DIFFERENCE</u>
C254 Perform knurling operations on lathes	80	39	41
D280 Drill holes with milling machines	89	51	38
A109 Remove or replace inserts, such as rosans or helicoils	91	53	38
B205 Remove or replace heating, cutting, or oxyacetylene welding tips	83	45	38
B225 True or dress grinding wheels	83	45	38
B151 Clean or store fixtures, jigs, or attachments	72	35	37
C263 Ream straight or tapered holes on lathes	81	44	37
C257 Perform parting operations on lathes	85	48	37
A108 Remove or replace damaged studs	82	45	37
B150 Clean or store cutters or cutting tools	80	44	36
A106 Remove or replace damaged bolts	89	53	36
*****	*****	*****	*****
O594 Conduct general meetings, such as staff meetings, briefings, conferences, or workshops	22	74	-52
O664 Schedule personnel for temporary duty (TDY) assignments, leaves, or passes	13	65	-52
O612 Develop or establish work schedules	24	74	-50
O592 Assign sponsors for newly assigned personnel	11	60	-49
O638 Evaluate work schedules	20	66	-46
O676 Write recommendations for awards or decorations	26	72	-46
O639 Evaluate workload requirements	23	68	-45
O636 Evaluate personnel for promotion, demotion, reclassification, or special awards	21	65	-44
O599 Conduct supervisory orientations for newly assigned personnel	29	73	-44
O635 Evaluate personnel for compliance with performance standards	38	81	-43

TABLE 17

REPRESENTATIVE TASKS PERFORMED BY NATIONAL GUARD  
DAFSC 2A751 GROUP MEMBERS  
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	<u>2A751 (N=153)</u>
A82 Perform drilling or reaming operations with drill presses	96
C248 Drill holes on lathes	96
A30 Cut threads with hand taps and dies	91
A31 Deburr machined surfaces	90
C264 Select lathe cutting tools	90
C227 Bore straight holes on lathes	90
A113 Rough or finish surfaces with hand files	89
A98 Remove damaged screws	88
C249 Face or center drill materials on lathes	88
C266 Select and set speeds and feeds for lathe operations	88
C265 Select tool holders or lathe attachments	88
C260 Perform straight turning operations on lathes	87
B152 Clean or store handtools	87
B172 Maintain personal protective gear	87
D307 Select and set speeds and feeds for milling operations	85
A48 Dispose of scrap metal, chips, or shavings	84
A61 Interpret blueprints	84
I417 Weld aluminum or aluminum alloys with TIG equipment in the flat position	84
A62 Interpret working drawings	80
A40 Determine dimensions from precision measurement tools, such as micrometers, vernier calipers, or dial indicators	79
D301 Perform milling operations using end mills	79
A86 Perform local manufacture of items	77



TABLE 18

REPRESENTATIVE TASKS PERFORMED BY NATIONAL GUARD  
DAFSC 2A771 GROUP MEMBERS  
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>		<u>2A771 (N=90)</u>
A31	Deburr machined surfaces	97
A98	Remove damaged screws	96
A40	Determine dimensions from precision measurement tools, such as micrometers, vernier calipers, or dial indicators	96
B152	Clean or store handtools	96
B172	Maintain personal protective gear	96
A99	Remove frozen or seized parts	96
A62	Interpret working drawings	95
A82	Perform drilling or reaming operations with drill presses	95
C264	Select lathe cutting tools	94
C266	Select and set speeds and feeds for lathe operations	94
A30	Cut threads with hand taps and dies	94
C260	Perform straight turning operations on lathes	93
C248	Drill holes on lathes	93
C265	Select tool holders or lathe attachments	93
A86	Perform local manufacture of items	91
B155	Inspect arc welding equipment	91
A83	Perform drilling or reaming operations with pneumatic drill motors	91
B165	Inspect milling machine setups for safe operating conditions	90
B162	Inspect lathes for safe operating conditions	90
A60	Inspect work areas for safe working environments	88
I417	Weld aluminum or aluminum alloys with TIG equipment in the flat position	88
C249	Face or center drill materials on lathes	88
B167	Inspect tungsten inert gas (TIG) welding equipment	87

TABLE 19

TASKS WHICH BEST DIFFERENTIATE BETWEEN NATIONAL GUARD  
DAFSC 2A751 AND 2A771 PERSONNEL  
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	<u>DAFSC 2A751</u>	<u>DAFSC 2A771</u>	<u>DIFFERENCE</u>
O606 Determine or establish work assignments or priorities	18	77	-59
R750 Maintain precision measurement equipment (PME) calibration schedules	8	66	-58
P685 Counsel trainees on training progress	9	63	-54
P692 Evaluate personnel to determine training needs	7	60	-53
O595 Conduct self-inspections or self-assessments	20	73	-53
P698 Maintain training records or files	8	60	-52
R753 Maintain organizational equipment or supply records, such as custodian authorization/custody receipt listings (CA/CRLs)	6	58	-52
P704 Schedule personnel for training	4	56	-52
O662 Review tables of allowance (TAs)	2	53	-51
P683 Conduct OJT	25	76	-51
O591 Assign personnel to work areas or duty positions	10	60	-50
B220 Schedule equipment for initial calibration	14	64	-50
O669 Supervise military personnel	11	61	-50
P686 Determine training requirements	8	58	-50
P696 Evaluate progress of trainees	10	59	-49
O602 Counsel subordinates concerning personal matters	5	53	-48
R743 Initiate requisitions for equipment, tools, parts, or supplies	14	62	-48
O599 Conduct supervisory orientations for newly assigned personnel	8	56	-48

TABLE 20

REPRESENTATIVE TASKS PERFORMED BY RESERVE  
DAFSC 2A751 GROUP MEMBERS  
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>		<u>2A751 (N=86)</u>
C248	Drill holes on lathes	93
A31	Deburr machined surfaces	91
A30	Cut threads with hand taps and dies	91
I417	Weld aluminum or aluminum alloys with TIG equipment in the flat position	91
C266	Select and set speeds and feeds for lathe operations	90
D280	Drill holes with milling machines	90
C249	Face or center drill materials on lathes	89
B172	Maintain personal protective gear	89
A48	Dispose of scrap metal, chips, or shavings	88
A61	Interpret blueprints	88
C264	Select lathe cutting tools	88
A113	Rough or finish surfaces with hand files	88
A98	Remove damaged screws	87
B170	Inventory composite tool kits (CTKs)	87
B152	Clean or store handtools	87
A106	Remove or replace damaged bolts	86
A63	Lay out materials for machine work	86
A40	Determine dimensions from precision measurement tools, such as micrometers, vernier calipers, or dial indicators	84
A62	Interpret working drawings	84
A13	Calculate dimensions of parts for or from blueprints or specifications	83
A60	Inspect work areas for safe working environments	82
A86	Perform local manufacture of items	81

TABLE 21

REPRESENTATIVE TASKS PERFORMED BY RESERVE  
DAFSC 2A771 GROUP MEMBERS  
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	<u>2A771 (N=58)</u>
C265 Select tool holders or lathe attachments	98
C260 Perform straight turning operations on lathes	96
A60 Inspect work areas for safe working environments	94
B170 Inventory composite tool kits (CTKs)	94
C248 Drill holes on lathes	94
A30 Cut threads with hand taps and dies	94
A98 Remove damaged screws	93
A86 Perform local manufacture of items	93
A99 Remove frozen or seized parts	93
A31 Deburr machined surfaces	93
A66 Locate information in technical orders (TOs), standards, or specifications	93
A63 Lay out materials for machine work	93
A61 Interpret blueprints	93
A65 Locate information in commercial publications, such as machinist handbooks	93
A46 Disassemble or assemble parts	93
C249 Face or center drill materials on lathes	93
A62 Interpret working drawings	91
D301 Perform milling operations using end mills	89
A59 Inspect parts	89
A41 Determine processing requirements from drawings, blueprints, or specifications	89
A40 Determine dimensions from precision measurement tools, such as micrometers, vernier calipers, or dial indicators	87
A13 Calculate dimensions of parts for or from blueprints or specifications	87
A73 Measure parts or assemblies for compliance with specifications	86

TABLE 22

TASKS WHICH BEST DIFFERENTIATE BETWEEN RESERVE  
DAFSC 2A751 AND 2A771 PERSONNEL  
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	<u>DAFSC 2A751</u>	<u>DAFSC 2A771</u>	<u>DIFFERENCE</u>
O669 Supervise military personnel	20	66	-46
P683 Conduct OJT	29	74	-45
O611 Develop or establish work methods or procedures	26	67	-41
P685 Counsel trainees on training progress	28	69	-41
O606 Determine or establish work assignments or priorities	31	72	-41
O595 Conduct self-inspections or self-assessments	31	72	-41
P696 Evaluate progress of trainees	23	62	-39
O601 Coordinate aircraft metals technologies shop activities with other agencies	23	60	-37
L518 Heat treat tools or cutting devices	34	71	-37
O614 Direct training functions	22	59	-37
O653 Participate in general meetings, such as staff meetings, briefings, conferences, or workshops, other than conducting	22	59	-37
B135 Adjust machine gibs	40	76	-36
O609 Develop self-inspection or self-assessment program checklists	13	48	-35
O602 Counsel subordinates concerning personal matters	17	52	-35
R750 Maintain precision measurement equipment (PME) calibration schedules	17	52	-35
P686 Determine training requirements	21	55	-34
O591 Assign personnel to work areas or duty positions	24	58	-34
P698 Maintain training records or files	28	62	-34

TABLE 23

AVERAGE TIME SPENT ON DUTIES BY ACTIVE DUTY, NATIONAL GUARD, AND  
RESERVE DAFSC 2A751 PERSONNEL\*

		<u>ACTIVE DUTY</u>	<u>NATIONAL GUARD</u>	<u>RESERVE</u>
A	Aircraft metals technologies activities	29	34	32
B	Tools or equipment maintenance	18	19	19
C	Lathe Operations	9	12	10
D	Milling Machine Operations	6	8	7
E	Power Cutoff Saw, Contour Saw, or Grinding Machine Operations	3	5	5
F	Computer Numerical Controlled (CNC) Machine Setup Activities	1	-	1
G	Oxyacetylene Operations	2	3	3
H	Arc Welding or Resistance Welding Operations	2	3	2
I	Tungsten Inert Gas (TIG) Shielded Welding Operations	9	8	9
J	Metallic Inert Gas (MIG) Shielded Welding Operations	1	1	1
K	Aircraft Engine Repair Activities	1	1	1
L	Cleaning and Heat Treating Activities	2	1	2
M	Metals Testing and Identification Procedures	2	2	1
N	Aircraft or Missile Structures and Components Repair	1	1	1
O	Management and Supervisory Activities	6	1	3
P	Training Activities	3	-	1
Q	General Administrative and Technical Order System Activities	2	-	1
R	General Supply and Equipment Activities	3	1	1

\* Columns may not add to 100 percent due to rounding

- Indicates less than 1 percent

TABLE 24

AVERAGE TIME SPENT ON TASKS BY ACTIVE DUTY, NATIONAL GUARD, AND  
RESERVE DAFSC 2A751 PERSONNEL

<u>TASKS</u>	<u>ACTIVE DUTY</u>	<u>NATIONAL GUARD</u>	<u>RESERVE</u>
C266      Select and set speeds and feeds for lathe operations	91	88	91
C248      Drill holes on lathes	90	96	93
A109      Remove or replace inserts, such as rosans or helicoils	90	84	91
A31        Deburr machined surfaces	89	90	92
A106      Remove or replace damaged bolts	89	74	86
B170      Inventory composite tool kits (CTKs)	88	71	87
A66        Locate information in technical orders (TOs), standards, or specifications	88	83	85
A86        Perform local manufacture of items	88	77	81
B172      Maintain personal protective gear	88	88	90
A105      Remove or replace bushings	88	77	80
C249      Face or center drill materials on lathes	88	89	90
C264      Select lathe cutting tools	88	91	88
A98        Remove damaged screws	87	88	87
C260      Perform straight turning operations on lathes	87	88	85
A30        Cut threads with hand taps and dies	87	92	92
A59        Inspect parts	86	73	73
A40        Determine dimensions from precision measurement tools, such as micrometers, vernier calipers, or dial indicators	83	79	85
A60        Inspect work areas for safe working environments	82	73	83
A128      Weld repair powered or nonpowered AGE	79	63	74

TABLE 25

AVERAGE TIME SPENT ON DUTIES BY ACTIVE DUTY, NATIONAL GUARD, AND  
RESERVE DAFSC 2A771 PERSONNEL\*

	<u>ACTIVE DUTY</u>	<u>NATIONAL GUARD</u>	<u>RESERVE</u>
A Aircraft metals technologies activities	20	27	28
B Tools or equipment maintenance	12	19	18
C Lathe Operations	4	9	9
D Milling Machine Operations	3	5	6
E Power Cutoff Saw, Contour Saw, or Grinding Machine Operations	2	4	4
F Computer Numerical Controlled (CNC) Machine Setup Activities	1	-	1
G Oxyacetylene Operations	1	3	3
H Arc Welding or Resistance Welding Operations	1	3	3
I Tungsten Inert Gas (TIG) Shielded Welding Operations	5	7	8
J Metallic Inert Gas (MIG) Shielded Welding Operations	-	1	1
K Aircraft Engine Repair Activities	1	1	1
L Cleaning and Heat Treating Activities	1	2	3
M Metals Testing and Identification Procedures	2	3	2
N Aircraft or Missile Structures and Components Repair	1	1	1
O Management and Supervisory Activities	30	8	7
P Training Activities	6	3	2
Q General Administrative and Technical Order System Activities	5	1	1
R General Supply and Equipment Activities	5	3	2

\* Columns may not add to 100 percent due to rounding

- Indicates less than 1 percent



TABLE 26

AVERAGE TIME SPENT ON TASKS BY ACTIVE DUTY, NATIONAL GUARD, AND  
RESERVE DAFSC 2A771 PERSONNEL\*

<u>TASKS</u>	<u>ACTIVE DUTY</u>	<u>NATIONAL GUARD</u>	<u>RESERVE</u>
O597 Conduct supervisory performance feedback sessions	86	28	36
O669 Supervise military personnel	81	61	66
O606 Determine or establish work assignments or priorities	81	77	72
O598 Conduct safety inspections of equipment or facilities	81	70	74
O653 Participate in general meetings, such as staff meetings, briefings, conferences, or workshops, other than conducting	80	56	59
O635 Evaluate personnel for compliance with performance standards	80	40	45
A60 Inspect work areas for safe working environments	80	89	95
O602 Counsel subordinates concerning personal matters	80	53	52
O595 Conduct self-inspections or self- assessments	78	73	72
O647 Inspect personnel for compliance with military standards	77	48	55
O594 Conduct general meetings, such as staff meetings, briefings, conferences, or workshops	73	34	36
O612 Develop or establish work schedules	73	48	47
O591 Assign personnel to work areas or duty positions	73	60	59
A59 Inspect parts	73	83	90
O599 Conduct supervisory orientations for newly assigned personnel	72	56	47
O674 Write performance reports or supervisory appraisals	71	16	24
A66 Locate information in technical orders (TOs), standards, or specifications	71	96	93
O601 Coordinate aircraft metals technologies shop activities with other agencies	70	61	60
O667 Schedule work assignments or priorities	69	51	50
O639 Evaluate workload requirements	68	51	33
O614 Direct training functions	66	62	59
A3 Bench check parts or assemblies	61	81	81

## ANALYSIS OF MAJCOM GROUPS

In this survey, the various MAJCOMs were cross-referenced for differences in tasks performed by members or the equipment used to perform duties. The TIG Welding and Milling and Lathe Machine Instructor jobs were limited to AETC personnel. All personnel in these two jobs were assigned to Aberdeen Proving Ground MD. All other identified jobs were represented by numerous MAJCOM personnel. All MAJCOMs had personnel performing work in the 18 duties. The percentage of personnel performing work on tasks was consistent from MAJCOM to MAJCOM.

## TRAINING ANALYSIS

Occupational survey data can be an integral source of information used to modify training programs. Modification of these training programs can assist first-term personnel in many ways (content easier to understand, more relevant, etc.). Factors that are useful in evaluating training can be jobs performed by first-enlistment personnel, distribution of first-enlistment personnel across the career ladder, percentages of first enlistment-personnel performing specific tasks, and TE and TD ratings provided by experienced personnel in the 2A7X1 career ladder (see **SURVEY METHODOLOGY**). To assist in the examination of the AFSC 2A7X1 STS, technical training personnel from Aberdeen Proving Ground MD matched tasks from the AFSC JI to appropriate sections of these documents. The following information reports on first-enlistment personnel who are on Active Duty status.

### First-Enlistment Personnel

There were 162 personnel in their first enlistment, 18 percent of the survey population. The majority of these members (88 percent) are grouped in the Aircraft Metals Technician Cluster (see Figure 2). A list of tasks commonly performed by first-enlistment personnel can be found in Table 27. It can be seen that these tasks are technical in nature and correspond to work performed by members of the Aircraft Metals Technician Cluster. Table 28 shows a partial list of support equipment used by large percentages of first-enlistment personnel. Equipment used includes handfed drill presses, dial calipers, dial indicators, and edgefinders. Many of the tasks performed by the members of this first-enlistment group coincide with equipment used, such as determining dimensions from precision measurement tools, such as micrometers, vernier calipers, or dial indicators.

### Training Emphasis (TE) and Task Difficulty (TD) Data

TE and TD ratings, coupled with percentages of first-enlistment personnel performing tasks, serve as tools when determining changes or adjustments in training. When combined with data on the percentages of first-enlistment personnel performing tasks, comparisons can be made to determine if training adjustments are necessary. For a more complete description of TE and TD ratings, see the Task Factor Administration section in **SURVEY METHODOLOGY**.

The tasks having the highest TE ratings covered selecting and setting speeds for milling operations, locating information in technical orders, and determining dimensions from precision measurement tools. A more thorough listing of tasks with the highest TE ratings can be found in Table 29.

The tasks with the highest TD ratings were writing 3-D offline and conversational programs for CNC machines, milling helical gears, and milling helixes. Most of these tasks are not recommended for first-enlistment personnel due to the high task difficulty and low percentages of members performing. A more thorough listing of tasks with high TD ratings can be found in Table 30.

To help training personnel focus on tasks which are most appropriate for entry level training, an additional factor, the Automated Training Indicator (ATI) was assigned to each task in the inventory. A computer program considered percent first-enlistment (1-48 months TAFMS) performing, TE and TD ratings, and the Course Training Decision Table found in AETCI 36-2601 to determine the ATI. Numbered on an 18-point scale (with 1 being the lowest level of training indicated) an ATI reading of 8 or less leads to a training decision of OJT only. For example, if a task has low TE and TD ratings and a low percent members performing, then a low ATI is assigned to that task. The decision table and explanation of ATIs precede the listing of tasks in descending order of ATI in the training extract. Training personnel should focus on tasks with an ATI of 18, suggesting these tasks should be in the entry level course. To assist in this determination, the ATI is assigned to all 756 tasks in this survey inventory.

Table 31 documents tasks with the highest ATI ratings. All tasks are performed by large numbers of first-enlistment personnel. The TE ratings corresponding to these tasks are also quite high. Due to high member performance and high TE ratings, these tasks are recommended for training in the basic course.

## FIRST-ENLISTMENT JOB DISTRIBUTION

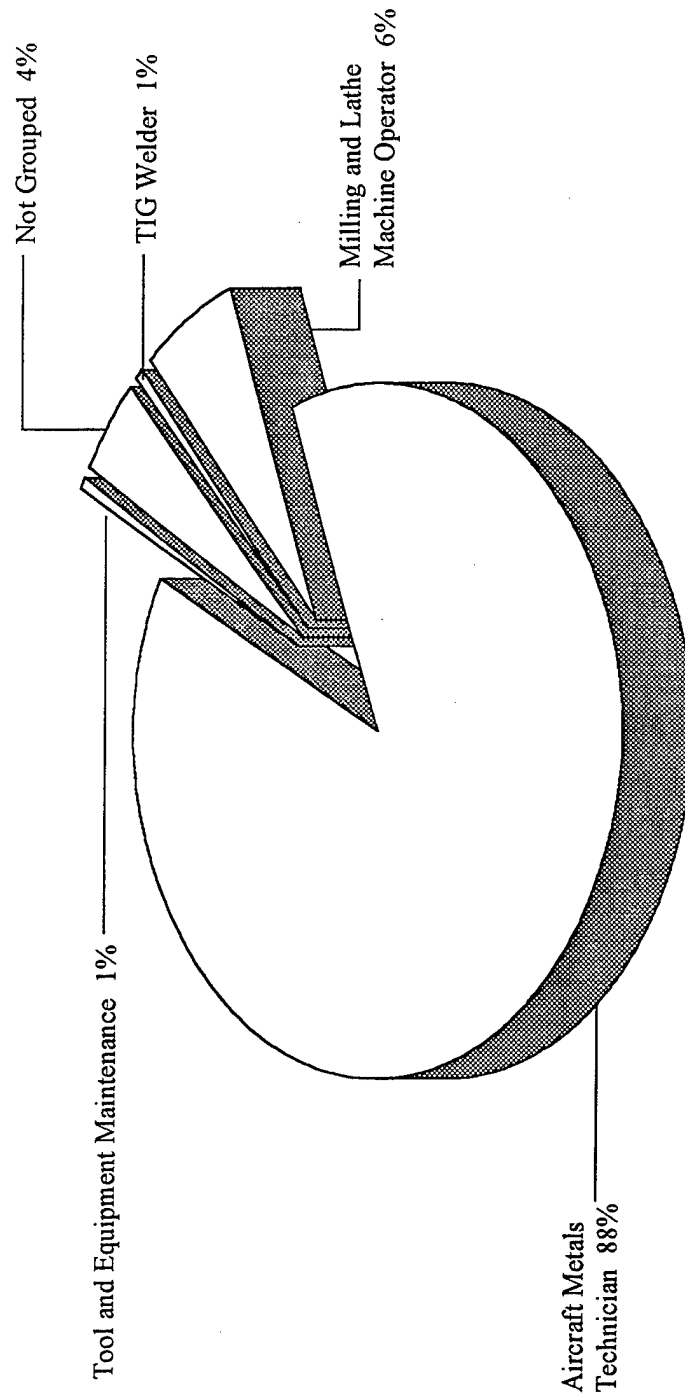


FIGURE 2

TABLE 27

REPRESENTATIVE TASKS PERFORMED BY DAFSC 2A7X1  
AIRMEN WITH 1-48 MONTHS TAFMS

<u>TASKS</u>		PERCENT MEMBERS PERFORMING (N=162)
I421	Weld carbon steels with TIG equipment in the flat position	97
A30	Cut threads with hand taps and dies	95
C248	Drill holes on lathes	95
C249	Face or center drill materials on lathes	95
A98	Remove damaged screws	94
A48	Dispose of scrap metal, chips, or shavings	94
C266	Select and set speeds and feeds for lathe operations	93
B152	Clean or store handtools	93
C264	Select lathe cutting tools	92
A109	Remove or replace inserts, such as rosans or helicoils	92
A31	Deburr machined surfaces	91
B172	Maintain personal protective gear	90
A86	Perform local manufacture of items	89
C260	Perform straight turning operations on lathes	89
B170	Inventory composite tool kits (CTKs)	88
A66	Locate information in technical orders (TOs), standards, or specifications	88
A4	Calculate allowances and tolerances	87
A128	Weld repair powered or nonpowered AGE	85
A84	Perform flight line safety procedures	84
A40	Determine dimensions from precision measurement tools, such as micrometers, vernier calipers, or dial indicators	77

TABLE 28

## SUPPORT EQUIPMENT USED BY AIRMEN WITH 1-48 MONTHS TAFMS

<u>EQUIPMENT</u>	<u>PERCENT MEMBERS USING</u>
Drill Presses (Handfed)	98
Calipers, Dial	97
Dial Indicators	96
Edgefinders	96
Micrometers, Depth	92
Micrometers, Measuring Outside Diameter (OD)	91
Band Cutoff Saws	90
Pneumatic Hand Drills	90
Hydraulic Presses	89
Sanders, Belt	88
Gages, Depth	87
Gages, Thread	87
Arbor Presses	86
Center Finders (Wiggler)	85
Indexing Heads, Conventional	85
Pneumatic Disc Sanders	85
Grinders, Pedestal	84
Calipers, Measuring Inside Diameter (ID)	83
Gages, Telescope	80
Gages, Vernier Height	80

TABLE 29

## TASKS RATED HIGHEST IN TRAINING EMPHASIS (TE)

TASK	TRAINING EMPHASIS*	PERCENT PERFORMING		TASK DIFFICULTY**
		FIRST JOB (N=75)	FIRST ENLISTMENT (N=162)	
D307	Select and set speeds and feeds for milling operations	89	89	4.68
A66	Locate information in technical orders (TOs), standards, or specifications	91	88	5.21
A40	Determine dimensions from precision measurement tools, such as micrometers, vernier calipers, or dial indicators	71	77	4.00
D301	Perform milling operations using end mills	88	89	4.71
D302	Perform precision locating on milling machines	73	79	5.24
D306	Select cutting tools for milling machines	88	88	4.78
D276	Align milling machine vises or attachments	89	93	4.36
I417	Weld aluminum or aluminum alloys with TIG equipment in the flat position	96	96	4.90
C266	Select and set speeds and feeds for lathe operations	92	94	4.26
C260	Perform straight turning operations on lathes	87	90	4.08
A62	Interpret working drawings	71	81	5.24
C264	Select lathe cutting tools	93	93	4.26
A63	Lay out materials for machine work	77	84	4.98
I470	Weld titanium or titanium alloys with TIG equipment in the flat position	59	66	5.30

\* Training Emphasis (TE) has an average of 2.28 and a standard deviation of 1.76 (high TE ratings are 4.04 and above)

\*\* Task Difficulty (TD) has an average of 5.0 and a standard deviation of 1.0 (high TD ratings are 6.0 and above)

TABLE 30

## TASKS RATED HIGHEST IN TASK DIFFICULTY (TD)

TASK	TASK DIFFICULTY*	PERCENT PERFORMING		TRAINING EMPHASIS**
		FIRST JOB (N=75)	FIRST ENLISTMENT (N=162)	
F355	Write 3-D offline computer programs for CNC machines	4	5	2.27
F354	Write 3-D conversational computer programs for CNC machines	5	6	1.82
D284	Mill helical gears	4	6	.93
D285	Mill helixes	11	10	.93
A33	Design blanking dies	19	19	.41
F340	Design computer programs for CNC machines	12	17	3.16
D293	Mill worm gears	5	6	.93
A79	Perform computer-aided design (CAD) operations	11	19	4.18
F343	Edit 3-D conversational computer programs for CNC machines	4	5	1.93
D283	Mill bevel gears	5	7	.73
F353	Write 2-D offline computer programs for CNC machines	5	4	2.86
A35	Design forming dies	12	15	.55
F344	Edit 3-D offline computer programs for CNC machines	4	4	2.05
A32	Design aircraft parts	29	32	1.43

\* Task Difficulty (TD) has an average of 5.0 and a standard deviation of 1.0 (high TD ratings are 6.0 and above)

\*\* Training Emphasis (TE) has an average of 2.28 and a standard deviation of 1.76 (high TE ratings are 4.04 and above)



TABLE 31

## EXAMPLE TASKS HIGH IN AUTOMATED TRAINING INDICATOR (ATI) RATINGS

TASK	PERCENT 1ST ENLISTMENT PERFORMING (N=162)	TRAINING EMPHASIS*	TASK DIFFICULTY**	ATI***
C257	88	5.00	4.60	18
A66	88	6.95	5.21	18
I451	60	4.34	5.23	18
A4	88	4.52	5.06	18
I453	59	4.34	5.37	18
D294	58	5.11	5.65	18
C263	77	5.20	4.55	18
C264	93	6.20	4.26	18
C265	88	5.89	4.16	18
C266	94	6.36	4.26	18
A59	78	4.48	5.14	18
C268	64	4.32	5.43	18
A13	75	5.27	5.18	18
D302	79	6.84	5.24	18

\* Training Emphasis (TE) has an average of 2.28 and a standard deviation of 1.76 (high TE ratings are 4.04 and above)

\*\* Task Difficulty (TD) has an average of 5.0 and a standard deviation of 1.0 (high TD ratings are 6.0 and above)

\*\*\* Automated Training Indicator (ATI) ratings are based on high percent members performing for first term members, high Training Emphasis (TE), and sufficient Task Difficulty (TD)

### Specialty Training Standard (STS)

Normally, for an item to be included on the STS it must have tasks matched by at least 20 percent of the first-job, first-enlistment, 5-, or 7-skill level members. Using this standard, most paragraphs of the STS were supported. Table 32 shows example STS elements that have matched inventory tasks with low percent members performing and moderate to low TE ratings. These items are recommended for consideration by SMEs for possible deletion from the STS based on the data. Training personnel should carefully review all areas of the STS to determine which areas are suitable for deletion.

There were several elements in the STS which had an entry level code associated, but had very few first-job or first-enlistment personnel performing the tasks. For example, item 22d(1) has one associated task (write 3-D offline computer programs for CNC machine). The proficiency code attached to item 22d(1) is "2b," suggesting a task knowledge and performance training requirement. Since there are few members performing the associated task work assigned, it is suggested that the proficiency code be switched to "-", indicating training by OJT only. Further support for OJT consideration is seen in the TE and ATI indicator ratings. In the above example, task F355, Write 3-D offline computer programs for CNC machines, has a TE rating of 2.97 and an ATI rating of 2. These indicators are quite low, suggesting that OJT is more appropriate for these tasks than formal training. Table 33 lists further examples of STS items identified for review.

There were 4 tasks with more than 20 percent members performing not matched to STS elements. These tasks were: L516 (Harden ferrous materials), L511 (Clean metals using wire wheels), E339 (Sharpen milling cutters or reamers on tool and cutter grinders), and E331 (Polish or buff with pedestal grinders). Table 34 displays these four tasks not matched to the STS, which have a criterion group with greater than 20 percent members performing. Because of the higher percentage of members performing these tasks, it may indicate that these need inclusion into the STS. These tasks may already fit into an STS paragraph, but simply were not referenced or they may be functions not currently reflected in any STS element. The data indicate a review of the STS is necessary for the possible insertion of these listed tasks in the next STS revision.

### **JOB SATISFACTION ANALYSIS**

A critical tool in examining any career ladder's success is personal job satisfaction. Data from job satisfaction studies can be used by career ladder managers to gain a better understanding of what factors effect job performance. In this case, career managers can examine job satisfaction to determine job performance of personnel. This OSR examined five satisfaction factors. These factors examined job interest, utilization of talents, utilization of training, sense of accomplishment, and reenlistment intentions. Table 35 displays job satisfaction indicators for AFSC 2A7X1 TAFMS groups and a comparative sample group consisting of mission equipment operations personnel surveyed in 1996. Table 36 compares TAFMS groups from the current

survey sample to TAFMS groups from the last survey report. Table 37 compares job satisfaction among the job types and clusters. Table 38 compares job satisfaction among the Active Duty, National Guard, and Reserve samples.

Data indicate personnel in the 2A7X1 career ladder are content with their current job. Comparing the current survey to similar mission equipment AFSCs, it can be seen that job satisfaction indicators are similar (see Table 35). Personnel in all TAFMS groups indicated higher job satisfaction than the comparative sample groups in all categories except reenlistment intentions.

Comparing the current survey to that conducted in 1993 revealed similar results. Members of the 1997 survey report similar job satisfaction as the previous sample in all categories (see Table 36). In this comparison, however, the 1997 sample had slightly lower overall job satisfaction indications. The 1997 1-48 month TAFMS group had lower job satisfaction ratings in all categories. The 1997 49-96 month TAFMS group indicated higher job satisfaction only in sense of accomplishment and re-enlistment intentions. The 1997 97+ month TAFMS group expressed higher job satisfaction only in perceived utilization of training and reenlistment intentions.

Table 37 breaks down job satisfaction by job group. The data is useful in examining the career ladder for any deficiencies in training or job placement. By locating these deficiencies, if any, career ladder experts can make necessary adjustments to training or job placement. In this survey, members of all jobs and clusters indicated high job satisfaction. Members expressed high reenlistment intentions (of those not opting for retirement). Perceived utilization of training and talents ratings were generally high, indicating that job skills are appropriately developed and applied. Only the extraction and disassembly job members expressed average training and talent utilization perception. Low indications of these categories may indicate members are inappropriately placed in a job or inappropriately trained.

Lastly, job satisfaction data was broken down by component groups (see Table 38). The groups indicated high satisfaction in all response categories. All groups indicated extremely high perceived utilization of talents and training. The National Guard and Reserve samples also indicated high reenlistment intentions. This data indicates that all component groups are generally well trained and members are satisfied with their current duties.

TABLE 32

EXAMPLE STS PERFORMANCE ELEMENTS REFLECTING  
LOW PERCENT MEMBERS PERFORMING TASKS  
(LESS THAN 20 PERCENT MEMBERS PERFORMING)

STS ELEMENTS/TASKS	TRAINING EMPHASIS*	FIRST JOB (N=75)	PERCENT MEMBERS PERFORMING					TASK DIFF**
			FIRST ENLIST (N=162)	DAFSC 2A731 (N=142)	DAFSC 2A751 (N=254)	DAFSC 2A771 (N=110)		
10a(2) Chemical Testing								
M542 Acid etch test metals	.41	0	1	1	1	1	5.37	
M550 Identify metals using alkalines	.23	1	2	2	1	2	5.27	
22d(1) Ferrous Metals								
F355 Write 3-D offline computer programs for CNC machines	2.27	4	5	6	9	16	7.96	
22d(2) Nonferrous Metals								
G365 Hard face copper or copper alloys with oxyacetylene equipment	.39	12	11	10	6	0	5.51	
25b(2)(b) Horizontal								
I463 Weld monel with TIG equipment in the horizontal position	2.80	7	6	6	14	11	5.37	
26a Weld								
H405 Plasma arc weld carbon steels	.66	3	7	6	5	3	5.31	

\* Training Emphasis (TE) has an average of 2.28 and a standard deviation of 1.76 (high TE ratings are 4.04 and above)

\*\* Task Difficulty (TD) has an average of 5.0 and a standard deviation of 1.0 (high TD ratings are 6.0 and above)

TABLE 33

## EXAMPLE STS ELEMENTS REQUIRING REVIEW OF 3-SKILL LEVEL PROFICIENCY CODES

STS ELEMENTS/TASKS	PROF CODE	TRAINING EMPHASIS*	PERCENT MEMBERS PERFORMING			TASK DIFF**
			FIRST (N=75)	JOB (N=162)	FIRST ENLIST	
22d(1) Ferrous Metals						
F355 Write 3-D offline computer programs for CNC machines	2b	2.27	4	5		7.96
25b(2)(b) Horizontal	2b					
I463 Weld monel with TIG equipment in the horizontal position		2.80	7	6		5.37
24b(2)(a) Flat						
J487 Weld magnesium or magnesium alloys with MIG equipment		.48	3	2		6.04
J478 Weld cobalt alloys with MIG equipment		.45	4	5		5.29
J481 Weld hastelloy with MIG equipment		.41	3	4		5.57
J485 Weld inconel with MIG equipment		.39	3	4		5.51
21a Operate						
A20 Calculate open or shut heights of presses		.64	16	19		5.26

\* Training Emphasis (TE) has an average of 2.28 and a standard deviation of 1.76 (high TE ratings are 4.04 and above)

\*\* Task Difficulty (TD) has an average of 5.0 and a standard deviation of 1.0 (high TD ratings are 6.0 and above)

TABLE 34

EXAMPLE TASKS WITH MORE THAN 20 PERCENT MEMBERS PERFORMING NOT  
MATCHED TO STS ELEMENTS

<u>TASKS NOT REFERENCED</u>	<u>TRAINING EMPHASIS*</u>	<u>FIRST JOB (N=75)</u>	<u>PERCENT MEMBERS PERFORMING</u>				<u>TASK DIFF**</u>
			<u>FIRST ENLIST (N=162)</u>	<u>DAFSC 2A731 (N=142)</u>	<u>DAFSC 2A751 (N=254)</u>	<u>DAFSC 2A771 (N=110)</u>	
L516 Harden ferrous metals	4.55	27	39	34	60	38	4.83
L511 Clean metals using wire wheels	3.61	63	62	62	68	37	3.66
E339 Sharpen milling cutters or reamers on tool and cutter grinders	2.66	24	20	18	19	6	6.79
E331 Polish or buff with pedestal grinders	2.34	33	36	33	43	22	3.87

\* Training Emphasis (TE) has an average of 2.28 and a standard deviation of 1.76 (high TE ratings are 4.04 and above)

\*\* Task Difficulty (TD) has an average of 5.0 and a standard deviation of 1.0 (high TD ratings are 6.0 and above)

TABLE 35

COMPARISON OF JOB SATISFACTION INDICATORS FOR 2A7X1 AND  
COMPARATIVE SAMPLE GROUP  
(PERCENT MEMBERS RESPONDING)\*

	<u>1-48 MONTHS TAFMS</u>		<u>49-96 MONTHS TAFMS</u>		<u>97+ MONTHS TAFMS</u>	
	1997 (N=162)	COMP SAMPLE (N=4506)	1997 (N=99)	COMP SAMPLE (N=3339)	1997 (N=245)	COMP SAMPLE (N=9548)
<u>EXPRESSED JOB INTEREST:</u>						
INTERESTING	85	75	85	73	83	78
SO-SO	5	16	10	16	10	14
DULL	10	7	5	11	6	8
<u>PERCEIVED UTILIZATION OF TALENTS:</u>						
FAIRLY WELL TO PERFECTLY	88	83	88	83	87	85
LITTLE OR NOT AT ALL	12	17	11	17	13	15
<u>PERCEIVED UTILIZATION OF TRAINING:</u>						
FAIRLY WELL TO PERFECTLY	90	89	87	84	88	81
LITTLE OR NOT AT ALL	10	11	13	16	12	19
<u>SENSE OF ACCOMPLISHMENT:</u>						
SATISFIED	84	73	92	72	80	74
NEUTRAL	7	14	3	13	8	11
DISSATISFIED	9	13	5	15	12	15
<u>REENLISTMENT INTENTIONS:</u>						
YES, OR PROBABLY YES	56	63	69	73	69	78
NO, OR PROBABLY NO	44	36	29	26	7	7
PLAN TO RETIRE	0	1	1	1	24	15

\* Columns may not add to 100 percent due to rounding or lack of response

\*\* Comparative sample of mission equipment AFSCs surveyed in 1996, including 2A7X2 (Nondestructive Inspection), 2A7X3 (Aircraft Structural Maintenance), and 2A7X4 (Fabrication and Parachute)

TABLE 36

COMPARISON OF JOB SATISFACTION INDICATORS FOR 1997 AND 1993 SURVEY GROUPS  
(PERCENT MEMBERS RESPONDING)\*

	<u>1-48 MONTHS TAFMS</u>		<u>49-96 MONTHS TAFMS</u>		<u>97+ MONTHS TAFMS</u>	
	1997 (N=162)	1993 (N=246)	1997 (N=99)	1993 (N=163)	1997 (N=245)	1993 (N=374)
<u>EXPRESSED JOB INTEREST:</u>						
INTERESTING	85	88	85	87	83	89
SO-SO	5	7	10	5	10	7
DULL	10	5	5	7	6	3
<u>PERCEIVED UTILIZATION OF TALENTS:</u>						
FAIRLY WELL TO PERFECTLY	88	90	88	90	87	89
LITTLE OR NOT AT ALL	12	10	11	10	13	11
<u>PERCEIVED UTILIZATION OF TRAINING:</u>						
FAIRLY WELL TO PERFECTLY	90	97	87	92	88	87
LITTLE OR NOT AT ALL	10	3	13	8	12	13
<u>SENSE OF ACCOMPLISHMENT:</u>						
SATISFIED	84	85	92	81	80	81
NEUTRAL	7	10	3	9	8	7
DISSATISFIED	9	5	5	10	12	12
<u>REENLISTMENT INTENTIONS:</u>						
YES, OR PROBABLY YES	56	63	69	60	69	61
NO, OR PROBABLY NO	44	37	29	40	7	39
PLAN TO RETIRE	0	0	1	0	24	0

\* Columns may not add to 100 percent due to rounding or lack of response



TABLE 37

COMPARISON OF JOB SATISFACTION DATA FOR CLUSTERS AND JOB TYPES  
(PERCENT MEMBERS RESPONDING)\*

	TOOL AND EQUIPMENT MAINTENANCE JOB	EXTRACTION AND DISASSEMBLY JOB	MILLING AND LATHE MACHINE OPERATOR JOB	AIRCRAFT METALS TECHNICIAN CLUSTER
<u>EXPRESSED JOB INTEREST:</u>				
INTERESTING	100	100	75	86
SO-SO	0	0	17	7
DULL	0	0	8	7
<u>PERCEIVED UTILIZATION OF TALENTS:</u>				
FAIRLY WELL TO PERFECTLY	100	50	83	88
LITTLE OR NOT AT ALL	0	50	17	12
<u>PERCEIVED UTILIZATION OF TRAINING:</u>				
FAIRLY WELL TO PERFECTLY	100	50	92	91
LITTLE OR NOT AT ALL	0	50	8	9
<u>SENSE OF ACCOMPLISHMENT:</u>				
SATISFIED	100	100	83	85
NEUTRAL	0	0	8	6
DISSATISFIED	0	0	8	8
<u>REENLISTMENT INTENTIONS:</u>				
YES, OR PROBABLY YES	67	100	58	68
NO, OR PROBABLY NO	33	0	42	25
PLAN TO RETIRE	0	0	0	7

\* Columns may not add to 100 percent due to rounding or lack of response

TABLE 37 (CONTINUED)

COMPARISON OF JOB SATISFACTION DATA FOR CLUSTERS AND JOB TYPES  
(PERCENT MEMBERS RESPONDING)\*

	TIG WELDER JOB	MILLING AND LATHE MACHINE INSTRUCTOR JOB	TIG WELDING INSTRUCTOR JOB	MANAGERIAL JOB
<u>EXPRESSED JOB INTEREST:</u>				
INTERESTING	75	100	100	76
SO-SO	25	0	0	18
DULL	0	0	0	6
<u>PERCEIVED UTILIZATION OF TALENTS:</u>				
FAIRLY WELL TO PERFECTLY LITTLE OR NOT AT ALL	100 0	100 0	100 0	85 15
<u>PERCEIVED UTILIZATION OF TRAINING:</u>				
FAIRLY WELL TO PERFECTLY LITTLE OR NOT AT ALL	100 0	100 0	100 0	80 20
<u>SENSE OF ACCOMPLISHMENT:</u>				
SATISFIED	75	86	86	68
NEUTRAL	25	0	0	12
DISSATISFIED	0	14	14	21
<u>REENLISTMENT INTENTIONS:</u>				
YES, OR PROBABLY YES	75	71	33	41
NO, OR PROBABLY NO	0	14	17	9
PLAN TO RETIRE	25	14	50	50

\* Columns may not add to 100 percent due to rounding or lack of response

TABLE 38

COMPARISON OF JOB SATISFACTION DATA FOR AFSC 2A7X1  
ACTIVE DUTY, NATIONAL GUARD, AND RESERVE GROUPS  
(PERCENT MEMBERS RESPONDING)\*

	ACTIVE DUTY (N=506)	NATIONAL GUARD (N=243)	RESERVE (N=144)
<u>EXPRESSED JOB INTEREST:</u>			
INTERESTING	84	87	88
SO-SO	8	11	8
DULL	7	2	3
<u>PERCEIVED UTILIZATION OF TALENTS:</u>			
FAIRLY WELL TO PERFECTLY LITTLE OR NOT AT ALL	88 12	95 5	90 9
<u>PERCEIVED UTILIZATION OF TRAINING:</u>			
FAIRLY WELL TO PERFECTLY LITTLE OR NOT AT ALL	89 11	95 5	92 7
<u>SENSE OF ACCOMPLISHMENT:</u>			
SATISFIED	83	85	83
NEUTRAL	7	9	8
DISSATISFIED	10	5	8
<u>REENLISTMENT INTENTIONS:</u>			
YES, OR PROBABLY YES	65	82	80
NO, OR PROBABLY NO	23	9	6
PLAN TO RETIRE	12	7	14

\* Columns may not add to 100 percent due to rounding or lack of response

## IMPLICATIONS

In terms of tasks performed and relative time spent on duties, the Aircraft Metals Technology career structure has changed very little since the previous OSR published in 1993. DAFSC 2A731 members are solely performing technical tasks in their duty time. They are predominately found in the Aircraft Metals Technician Cluster. As members advance to the 5-skill level they are still almost purely technical workers. These personnel are still found mostly in the Aircraft Metals Technician Cluster. These members are senior level aircraft metals technicians. However, these members are beginning to perform managerial tasks, albeit few. Members advancing to the 7-skill level become managerial in nature. These members devote their time to supervisory activities as they develop work schedules, counsel military subordinates, and conduct various training programs. This career ladder progression is nearly identical to that reported in the 1993 survey.

Analysis of the AFSC 2A7X1 STS reflected support for most areas, although some were identified as unsupported. Some areas identified as unsupported included ferrous and nonferrous metals, chemical testing, and various welding applications. The STS document should be thoroughly examined to determine if areas should be retained or deleted in the next Career Field Education and Training Plan (CFETP). Some training elements may be critical to retain due to certain safety or mission essential functions though performance indicators are low. The tasks with high percentages of members performing should be examined for inclusion into the CFETP documents.

The personnel of the 2A7X1 career field expressed high job satisfaction. The large majority of members not opting for retirement indicated reenlistment intentions. Furthermore, these members expressed high satisfaction in perceived utilization of talents and training. This indicates that members are well trained and their skills are properly applied to their jobs.

**APPENDIX A**

**SELECTED REPRESENTATIVE TASKS PERFORMED BY  
CAREER LADDER STRUCTURE GROUPS**

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TABLE I  
REPRESENTATIVE TASKS PERFORMED BY  
TOOL AND EQUIPMENT MAINTENANCE JOB  
(ST054)

<u>TASK</u>	<u>PERCENT MEMBERS PERFORMING</u>
B167 Inspect tungsten inert gas (TIG) welding equipment	100
B152 Clean or store handtools	100
B195 Perform operator maintenance on stationary TIG equipment	100
B189 Perform operator maintenance on portable TIG equipment	100
I422 Weld carbon steels with TIG equipment in the horizontal position	100
B147 Clean or lubricate milling machines	85
B150 Clean or store cutters or cutting tools	85
B191 Perform operator maintenance on powered metal cutting equipment	85
B187 Perform operator maintenance on portable oxyacetylene equipment	85
B164 Inspect metallic inert gas (MIG) welding equipment	85
A90 Perform sanding operations with pneumatic tools	85
A118 Set up for portable welding operations	85
B201 Remove or replace gas regulators on welding equipment	85
B205 Remove or replace heating, cutting, or oxyacetylene welding tips	85
B174 Maintain precision tools or fixtures	71
B155 Inspect arc welding equipment	71
B168 Inspect or refinish handtools	71
B189 Perform operator maintenance on portable TIG equipment	71

TABLE II  
 REPRESENTATIVE TASKS PERFORMED BY  
 EXTRACTION AND DISASSEMBLY JOB  
 (ST041)

<u>TASK</u>	<u>PERCENT MEMBERS PERFORMING</u>
A98 Remove damaged screws	100
A106 Remove or replace damaged bolts	100
A82 Perform drilling or reaming operations with drill presses	100
A105 Remove or replace bushings	100
A30 Cut threads with hand taps and dies	100
A109 Remove or replace inserts, such as rosans or helicoils	100
A31 Deburr machined surfaces	100
A2 Assemble or disassemble parts with presses	100
C257 Perform parting operations on lathes	100
A99 Remove frozen or seized parts	80
A83 Perform drilling or reaming operations with pneumatic drill motors	80
A112 Rework internal threads with handtools, such as taps or threading tools	80
A104 Remove or replace bearings	80
A111 Rework external threads with handtools, such as taps or threading tools	80
E334 Remove or replace saw blades	80
A1 Apply corrosion preventative materials to parts, tools, or equipment	80



TABLE III  
REPRESENTATIVE TASKS PERFORMED BY  
MILLING AND LATHE MACHINE OPERATOR JOB  
(ST042)

<u>TASK</u>	<u>PERCENT MEMBERS PERFORMING</u>
A31    Deburr machined surfaces	87
C248   Drill holes on lathes	97
C264   Select lathe cutting tools	92
C266   Select and set speeds and feeds for lathe operations	89
C249   Face or center drill materials on lathes	92
C260   Perform straight turning operations on lathes	84
C265   Select tool holders or lathe attachments	87
B152   Clean or store handtools	79
A98    Remove damaged screws	71
A48    Dispose of scrap metal, chips, or shavings	76
D301   Perform milling operations using end mills	76
D307   Select and set speeds and feeds for milling operations	79
A30    Cut threads with hand taps and dies	82
A82    Perform drilling or reaming operations with drill presses	82
C227   Bore straight holes on lathes	87
D306   Select cutting tools for milling machines	76
C257   Perform parting operations on lathes	89
D280   Drill holes with milling machines	79
B147   Clean or lubricate milling machines	82
C253   Perform filing operations on lathes	74
D276   Align milling machine vises or attachments	71

TABLE IV  
 REPRESENTATIVE TASKS PERFORMED BY  
 AIRCRAFT METALS TECHNICIAN CLUSTER  
 (ST067)

<u>TASK</u>	<u>PERCENT MEMBERS PERFORMING</u>
C248 Drill holes on lathes	96
A30 Cut threads with hand taps and dies	96
A31 Deburr machined surfaces	95
B172 Maintain personal protective gear	95
C266 Select and set speeds and feeds for lathe operations	95
A98 Remove damaged screws	94
C249 Face or center drill materials on lathes	94
C260 Perform straight turning operations on lathes	94
C264 Select lathe cutting tools	94
A66 Locate information in technical orders (TOs), standards, or specifications	93
B152 Clean or store handtools	93
C265 Select tool holders or lathe attachments	93
A86 Perform local manufacture of items	92
A62 Interpret working drawings	92
A105 Remove or replace bushings	91
A99 Remove frozen or seized parts	91
B170 Inventory composite tool kits (CTKs)	90
D301 Perform milling operations using end mills	90
A40 Determine dimensions from precision measurement tools, such as micrometers, vernier calipers, or dial indicators	89
A60 Inspect work areas for safe working environments	86

TABLE V  
REPRESENTATIVE TASKS PERFORMED BY  
TIG WELDER JOB  
(ST066)

<u>TASK</u>	<u>PERCENT MEMBERS PERFORMING</u>
I418 Weld aluminum or aluminum alloys with TIG equipment in the horizontal position	100
I417 Weld aluminum or aluminum alloys with TIG equipment in the flat position	100
I421 Weld carbon steels with TIG equipment in the flat position	100
I422 Weld carbon steels with TIG equipment in the horizontal position	100
I424 Weld carbon steels with TIG equipment in the vertical position	100
I423 Weld carbon steels with TIG equipment in the overhead position	100
I439 Weld hastelloy with TIG equipment in the flat position	100
I440 Weld hastelloy with TIG equipment in the horizontal position	100
I420 Weld aluminum or aluminum alloys with TIG equipment in the vertical position	100
I451 Weld low alloy steels with TIG equipment in the horizontal position	100
I453 Weld low alloy steels with TIG equipment in the vertical position	100
I450 Weld low alloy steels with TIG equipment in the flat position	100
A128 Weld repair powered or nonpowered AGE	90
I419 Weld aluminum or aluminum alloys with TIG equipment in the overhead position	90
A98 Remove damaged screws	90
I442 Weld hastelloy with TIG equipment in the vertical position	90
I441 Weld hastelloy with TIG equipment in the overhead position	90
K490 Clean aircraft engine components	90
I445 Weld inconel with TIG equipment in the flat position	90
I446 Weld inconel with TIG equipment in the horizontal position	90
I448 Weld inconel with TIG equipment in the vertical position	90
A90 Perform sanding operations with pneumatic tools	81

TABLE VI  
REPRESENTATIVE TASKS PERFORMED BY  
MILLING AND LATHE MACHINE INSTRUCTOR JOB  
(ST094)

<u>TASK</u>	<u>PERCENT MEMBERS PERFORMING</u>
A44 Determine trigonometric calculations	100
D301 Perform milling operations using end mills	100
B135 Adjust machine gibs	100
P698 Maintain training records or files	100
P689 Develop training materials or aids	100
B224 Troubleshoot machine malfunctions	100
P682 Conduct formal course classroom training	100
D280 Drill holes with milling machines	100
D307 Select and set speeds and feeds for milling operations	100
D279 Bore holes with milling machines using offset boring heads	100
D277 Align milling machine heads	100
D306 Select cutting tools for milling machines	100
D276 Align milling machine vises or attachments	100
D289 Mill square or flat keyways	100
D294 Perform angular milling	100
B162 Inspect lathes for safe operating conditions	100
D291 Mill woodruff keyseats	100
P696 Evaluate progress of trainees	85
P678 Administer or score tests	85
C260 Perform straight turning operations on lathes	85
P699 Personalize lesson plans	85
P688 Develop performance tests	85

TABLE VII  
REPRESENTATIVE TASKS PERFORMED BY  
TIG WELDING INSTRUCTOR JOB  
(ST047)

<u>TASK</u>	<u>PERCENT MEMBERS PERFORMING</u>
P682 Conduct formal course classroom training	100
B217 Remove or replace TIG welding equipment components or accessories	100
I432 Weld cobalt alloys with TIG equipment in the flat position	100
P685 Counsel trainees on training progress	100
I445 Weld inconel with TIG equipment in the flat position	100
I454 Weld magnesium or magnesium alloys with TIG equipment in the flat position	100
H378 Arc weld carbon steels in the flat position	100
B167 Inspect tungsten inert gas (TIG) welding equipment	100
I466 Weld precipitation-hardening (PH) stainless steels with TIG equipment in the flat position	100
P699 Personalize lesson plans	100
B195 Perform operator maintenance on stationary TIG equipment	100
G373 Weld carbon steels with oxyacetylene equipment in the flat position	100
B205 Remove or replace heating, cutting, or oxyacetylene welding tips	100
I458 Weld martensitic stainless steels with TIG equipment in the flat position	100
I417 Weld aluminum or aluminum alloys with TIG equipment in the flat position	100
B172 Maintain personal protective gear	100
I470 Weld titanium or titanium alloys with TIG equipment in the flat position	100
B155 Inspect arc welding equipment	100
I446 Weld inconel with TIG equipment in the horizontal position	83
I433 Weld cobalt alloys with TIG equipment in the horizontal position	83
I455 Weld magnesium or magnesium alloys with TIG equipment in the horizontal position	83
I467 Weld PH stainless steels with TIG equipment in the horizontal position	83

TABLE VIII  
 REPRESENTATIVE TASKS PERFORMED BY  
 MANAGERIAL JOB  
 (ST043)

<u>TASK</u>	<u>PERCENT MEMBERS PERFORMING</u>
O669 Supervise military personnel	97
O597 Conduct supervisory performance feedback sessions	97
O653 Participate in general meetings, such as staff meetings, briefings, conferences, or workshops, other than conducting	94
O606 Determine or establish work assignments or priorities	94
O602 Counsel subordinates concerning personal matters	91
O599 Conduct supervisory orientations for newly assigned personnel	91
O594 Conduct general meetings, such as staff meetings, briefings, conferences, or workshops	89
O598 Conduct safety inspections of equipment or facilities	89
O591 Assign personnel to work areas or duty positions	89
O647 Inspect personnel for compliance with military standards	89
O604 Determine or establish logistics requirements, such as personnel, equipment, tools, parts, supplies, or workspace	89
O601 Coordinate aircraft metals technologies shop activities with other agencies	86
O674 Write performance reports or supervisory appraisals	86
O595 Conduct self-inspections or self-assessments	86
O612 Develop or establish work schedules	86
O635 Evaluate personnel for compliance with performance standards	83
O638 Evaluate work schedules	83
O614 Direct training functions	81
O636 Evaluate personnel for promotion, demotion, reclassification, or special awards	78
O676 Write recommendations for awards or decorations	78
O619 Endorse performance reports or supervisory appraisals	78
A60 Inspect work areas for safe working environments	67